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KEY TO THE FAMILIES OF THE DICOTYLEDONS

TAKEN FROM

THE FAMILIES OF FLOWERING PLANTS

VOL. I. DICOTYLEDONS

BY

J. HUTCHINSON, F.L.S.

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J. HUTCHINSON, F.L.S.

ASSISTANT IN THE HERBARIUM
ROYAL BOTANIC GARDENS, KEW

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NOTE.—In reading the proofs for this separate reprint, the opportunity has been taken to make a few corrections in the key and in the general text, the more important of which have been embodied in an errata slip for insertion in copies of the complete book.

KEY TO THE FAMILIES OF DICOTYLEDONS

Up to the middle of last century, and even later, the practice of determining plants by means of a *key* was very much discouraged, as tending to superficial observation. Thus no analytical keys are to be found in De Candolle's Prodromus, which through lack of them failed to fulfil the purpose for which it was intended. In those days once the name of a plant was ascertained nothing more was thought to be required. But we have come to realise that to identify a plant is but a means to an end, and not the end itself. Botanists now want to know something more than the mere name, something about its habitat, its distribution, its structure and affinities from a phylogenetic point of view, and so on, and although the old method of wading through innumerable descriptions may have conduced to accurate and painstaking observation, many mistakes were no doubt made for want of a good analytical key.

As time went on the known species became more numerous and confusing, and a compromise appeared in the shape of the *conspectus*. In most floristic works the conspectus is all that is provided for the determination of the family. But if the family is not easily ascertainable, then it is not possible to determine the genus, and least of all the species. It seems highly desirable, therefore, that a floristic work should now be prefaced by a key based on macroscopic and easily observed characters.

The following is an attempt in this direction. Like most keys it will not prove infallible, but it will achieve its purpose if it brings to the student that preliminary knowledge of the families of flowering plants which is so necessary for work in the field, the garden, the herbarium or laboratory.

HINTS FOR USING THE KEY TO THE BEST ADVANTAGE

Do not start to use the key before you have examined your plant thoroughly. If you do you may easily go wrong. Make out (1) whether the carpels are *free* from each other or *united*; (2) if united, then make quite sure whether the

ovules are on the *walls* (parietal placentation) or at the *apex*, *base* or *centre* of the ovary (apical, basal and central placentation respectively). Then note the number of stamens, and if few, whether *opposite to* or *alternate with* the petals. Then see whether there are *stipules*. The stipules may have fallen off; if so, you will be able to detect a *scar*, and then the leaves *are* stipulate. You must use a lens for these characters, and a razor or sharp pen-knife for the ovary.

Do not be afraid to cut a section of the ovary to see the arrangement of the ovules; in any case, with this key, you need not trouble whether the ovule is *anatropous*, *orthotropous*, or *campylotropous*, or whether it has one or two coats, which is something to be thankful for.

Do not, in using this key, read only the paragraph which seems to fit the plant you wish to determine. You will be much more sure if you read also the contrasting paragraph further on.

Do not always blame the key if you cannot arrive at the family readily. You may have misread it, or your own observation may be at fault. If it *is* the fault of the key, write and tell the author, and you will help to make it more useful.

KEY TO THE ARTIFICIAL GROUPS[1]

Gynaecium (pistil) composed of 2 or more *separate* or nearly quite separate carpels with *separate styles* and stigmas (rarely the free carpels immersed in the expanded torus (*Nymphaeaceae*))	"APOCARPAE"
Petals present, free from each other, sometimes considerably modified	Group 1 (p. 4)
Petals present, more or less united	Group 2 (p. 8)
Petals absent	Group 3 (p. 8)
Gynaecium (pistil) composed of 1 carpel or of 2 or more *united* carpels with free or united styles, or if carpels free below, then the styles or stigmas united . .	"SYNCARPAE"
Ovules attached to the wall or walls of the ovary . .	"PARIETALES"
Ovary superior:	
Petals present, free from each other	Group 4 (p. 9)
Petals present, more or less united	Group 5 (p. 13)
Petals absent	Group 6 (p. 15)

[1] The names used for these groups are applied here for convenience. The "Parietales" in this sense are not the *Parietales* of either Bentham and Hooker or of Engler. The student should on no account mistake this artificial grouping for the new system of classification proposed in the complete work from which this key is reprinted.

Ovary inferior :
Petals present, free from each other . . . Group 7 (p. 16)
Petals present, more or less united . . . Group 8 (p. 17)
Petals absent . . . . . Group 9 (p. 18)
Ovules attached to the central axis or to the base or apex of the ovary . . . . . "AXILES"
Ovary superior :
Petals present, free from each other . . . Group 10 (p. 18)
Petals present, more or less united . . . Group 11 (p. 32)
Petals absent . . . . . Group 12 (p. 38)
Ovary inferior :
Petals present, free from each other . . . Group 13 (p. 45)
Petals present, more or less united . . . Group 14 (p. 49)
Petals absent . . . . . Group 15 (p. 51)

GROUP I

Two or more free carpels : petals present, free from each other

Leaves opposite or verticillate (never all radical) (to p. 5) :
Stamens numerous (15 or more) :
Stamens arranged all to one side of the flower ; seeds arillate ; trailing or climbing shrubs *Dilleniaceae.*
Stamens arranged symmetrically around the carpels :
Leaves stipulate ; fruits follicular or indehiscent, sometimes arranged on a large fleshy torus ; style often lateral or basal *Rosaceae.*
Leaves without stipules :
Herbs or succulents, sometimes slightly woody only at the base :
Carpels more or less free from the beginning ; leaves often fleshy and connate at the base ; flowers usually 5-merous *Crassulaceae.*
Carpels connivent at first, then free and torulose ; lower leaves alternate, not fleshy ; sepals 3 ; petals 6 *Papaveraceae.*
Trees, shrubs or woody climbers :
Receptacle more or less campanulate or deeply concave ; no tendrils :
Anthers opening by valves or slits ; carpels at or towards the base of a hollow receptacle ; seeds with endosperm ; mainly tropical *Monimiaceae.*
Anthers opening by slits ; sepals and petals in several series ; carpels numerous, lining the hollow receptacle ; seeds without endosperm ; temperate regions *Calycanthaceae.*
Receptacle neither hollow nor concave ; petals numerous, linear ; anthers opening by longitudinal slits ; petiole ending in a tendril *Ranunculaceae.*
Stamens up to 15 in number :
Herbs, often succulent ; leaves mostly connate at the base, exstipulate ; flowers often cymose ; carpels the same number as the petals ; seeds minute, with fleshy endosperm *Crassulaceae.*
Trees, shrubs or woody climbers :
Carpels inserted at or near the base of a hollow receptacle (calyx-tube) ; anthers opening by valves or slits ; seeds with endosperm *Monimiaceae.*
Carpels inserted on a more or less convex slightly concave torus :
Carpels 3-7 ; flowers large ; petals yellow, not clawed, inserted at the base of a fleshy torus ; stipules paired, axillary ; anthers opening by short or long pores *Ochnaceae.*

Carpels 5-10; petals persistent and thickened after flowering; shrubs with angular branchlets; stipules absent; flowers small, green; anthers large *Coriariaceae.*

Carpels 1-3; petals often clawed, thin, not thickened after flowering; stipules mostly intrapetiolar, often connate at the base; sepals often biglandular at the base *Malpighiaceae.*

Carpels 2; petals not clawed, scarious; flowers in axillary heads; calyx not glandular; stipules caducous *Cunoniaceae.*

Leaves alternate or all radical:

Leaves stipulate, sometimes the stipules minute or adnate to the petiole, or enclosing the young buds:

Carpels numerous, spirally arranged on a somewhat elongated receptacle; sepals often 3 or indistinguishable from the 6 or more petals; flowers solitary, mostly large and conspicuous; seeds with copious endosperm and minute embryo; trees or shrubs *Magnoliaceae.*

Carpels few or numerous on a globose small or hollow receptacle; sepals or calyx-lobes often 5, quite distinct from the petals:

Stamens free from one another or nearly so or shortly united into separate bundles; calyx imbricate or valvate:

Herbs, more or less scapigerous, with mostly radical leaves; seeds not arillate; endosperm usually copious; sepals mostly imbricate *Saxifragaceae.*

Habit various; seeds not arillate; fruits follicular or indehiscent, often achenes arranged on a large fleshy torus; endosperm absent or very scanty; sepals mostly imbricate *Rosaceae.*

Trees, shrubs or climbers, rarely herbs, with often scabrid prominently pinnately nerved leaves; stipules adnate to the petiole; seeds arillate, aril often laciniate; calyx imbricate, often hardened in fruit *Dilleniaceae.*

Trees with large leaves and with stellate hairs; seeds not arillate; endosperm copious; calyx valvate *Tiliaceae.*

Stamens more or less united into a column; calyx valvate; hairs on the leaves often stellate or lepidote *Sterculiaceae.*

Leaves without stipules:

Carpels completely sunk in the tissue of the large broad torus:

Aquatic plants with floating leaves; endosperm not ruminate *Nymphaeaceae.*

Not aquatic; branched trees or shrubs; endosperm ruminate *Eupomatiaceae.*

Carpels not sunk in the tissue of the torus or only very slightly so:

Stamens the same number as and opposite to the petals; carpels usually 3 or rarely numerous:

Leaves compound; petals smaller than the sepals, sometimes minute; fruit usually baccate; endosperm never ruminate:

Carpels few (up to 9), in whorls *Lardizabalaceae.*

Carpels numerous, spirally arranged *Sargentodoxaceae.*

Leaves simple; fruit drupaceous; endosperm sometimes ruminate *Menispermaceae.*

Stamens alternate with the petals or monadelphous or more numerous (rarely fewer) than the petals:

Stamens numerous, more than 12, or more than double the number of petals (to p. 7):

Sepals and petals connate into a calyptrum:

Styles connate into a mass; endosperm ruminate; carpels sunk in the torus *Eupomatiaceae.*

Styles free; seeds not arillate; endosperm smooth; carpels sessile, not sunk in the torus:
Indumentum not lepidote; leaves gland-dotted; carpels remaining free in fruit *Winteraceae.*
Indumentum lepidote; carpels concrescent in fruit *Himantandraceae.*
Styles free; seeds covered with a multifid aril; carpels on a short common stipe; leaves neither gland-dotted nor lepidote *Crossosomataceae.*
Sepals and petals not connate into a calyptrum; styles free or rarely slightly connivent at the base:
Sepals and petals in 3 distinct series (3+3+3), rarely in 2 series:
Anthers usually with a broad truncate connective; flowers usually hermaphrodite; seed with copious ruminate endosperm and minute embryo; trees, shrubs, or woody climbers *Anonaceae.*
Anthers with a narrow connective; flowers dioecious *Menispermaceae.*
Sepals and petals in 2 series or rarely the sepals gradually passing into the petals, usually in 4's or 5's, or rarely the petals numerous; endosperm not ruminate:
Herbs, sometimes rather woody at the base:
Carpels in a single whorl and elevated on a stipe-like torus; petals 3 or more times divided *Resedaceae.*
Carpels not elevated on the torus usually spirally arranged; petals entire, bifid, or tubular:
Carpels free from the beginning; sepals and petals usually 5 each or the latter more numerous; flowers actinomorphic or zygomorphic; rarely aquatics; fruit an achene, follicle or rarely a berry *Ranunculaceae.*
Carpels free from the beginning; sepals and petals 3 each; flowers actinomorphic; aquatic herbs with the floating leaves peltate *Cabombaceae.*
Carpels at first connivent, at length free and torulose; sepals 3; petals 6; flowers actinomorphic; not aquatics *Papaveraceae.*
Trees, shrubs or woody climbers:
Petals and stamens hypogynous:
Flowers hermaphrodite or very rarely polygamous:
Calyx imbricate:
Leaves aromatic, pellucid-punctate; sepals deciduous; seeds not arillate; petals numerous *Winteraceae.*
Leaves not aromatic; lateral nerves prominent and parallel; sepals persistent and often accrescent; seeds often arillate *Dilleniaceae.*
Calyx valvate; indumentum stellate or lepidote:
Connective of anthers not enlarged *Tiliaceae.*
Connective of anthers enlarged, not petaloid *Anonaceae.*
Connective of anthers petaloid *Himantandraceae.*
Flowers unisexual:
Leaves simple; seeds with copious endosperm and small embryo; filaments more or less united towards the base or in a mass *Schizandraceae.*
Leaves pinnate or simple; seeds with or without endosperm and fairly large embryo *Simarubaceae.*
Petals and stamens perigynous:
Disk absent:
Endosperm present, fleshy; seeds arillate *Crossosomataceae.*

Endosperm absent ; seeds not arillate *Rosaceae.*
Disk present, adnate to the inside of the calyx-tube ; anthers often opening by valves ; leaves mostly pellucid-dotted ; calyx-lobes in 2 or more series ; carpels arranged on the inside of the hollow receptacle *Monimiaceae.*

Stamens 12 or fewer, or double the number of petals when more than 6 :
Leaves gland-dotted :
Leaves simple ; carpels in a spiral, mostly numerous ; stamens more or less united in a mass ; fruiting carpellary axis elongated ; flowers solitary *Schizandraceae.*
Leaves often compound ; carpels whorled ; the axis in fruit not elongated ; stamens more or less free from one another *Rutaceae.*
Leaves not gland-dotted :
Leaves compound :
Flowers unisexual or polygamous ; carpels usually 3, rarely 6 or 9 ; stamens often monadelphous *Lardizabalaceae.*
Flowers hermaphrodite :
Herbs ; seeds with copious endosperm and small embryo *Ranunculaceae.*
Herbs, shrubs or trees ; seeds without endosperm :
Wood with resin ducts ; seeds not arillate *Anacardiaceae.*
Wood without resin ducts ; seeds often arillate *Connaraceae.*
Wood without resin ducts ; seeds not arillate *Rosaceae.*
Leaves simple (sometimes the submerged ones of aquatics dissected) :
Stamens free or slightly united at the base :
Flowers hermaphrodite :
Shrubs or trees ; seeds usually arillate :
Leaves reduced to scales ; aril laciniate *Dilleniaceae.*
Leaves not reduced to scales ; seeds not arillate ; leaves pinnatisect ; carpels 5-10, with 2 ovules in the middle ; stamens 5 or 10 *Ranunculaceae.*
Leaves not reduced to scales ; aril entire, more or less cupular ; carpels with 2 basal collateral ovules *Connaraceae.*
Leaves not reduced, not pinnatisect ; no aril *Anacardiaceae.*
Herbs ; seeds not arillate :
Aquatics with peltate floating leaves *Cabombaceae.*
Not aquatics ;
Carpels at the top of a gynophore *Resedaceae.*
Carpels not on a gynophore, but sometimes on an elongated axis :
Torus elongated or cone-like ; annual herbs with entire leaves ; carpels usually very numerous *Ranunculaceae.*
Torus flat or concave ; carpels few :
Carpels the same number as the petals *Crassulaceae.*
Carpels fewer than the petals *Saxifragaceae.*
Flowers dioecious ; petals and stamens in 3's or multiples of 3 *Menispermaceae.*
Stamens united into a column ; flowers unisexual :
Carpels numerous *Schizandraceae.*
Carpels definite, often 3, rarely 6 or 9 *Menispermaceae.*

GROUP 2

Two or more free carpels ; petals present, more or less united

Leaves simple ; flowers dioecious ; seeds sometimes with ruminate endosperm, not arillate ; fruit a drupe ; mostly climbers with soft wood and broad medullary rays *Menispermaceae.*

Leaves usually pinnate or unifoliolate ; flowers hermaphrodite ; seeds often arillate ; fruit a capsule ; trees, shrubs or climbers *Connaraceae.*

Leaves 1-7-foliolate ; flowers somewhat zygomorphic, hermaphrodite ; fruit a capsule ; seeds not arillate ; trees or shrubs ; leaves often punctate *Rutaceae.*

Leaves simple, opposite or scattered, often fleshy, not punctate ; flowers actinomorphic, hermaphrodite ; fruits dehiscent ; herbs or shrubs *Crassulaceae.*

GROUP 3

Two or more free carpels ; petals absent

Trees, shrubs or hard-wooded climbers ; leaves simple or rarely compound ; sepals not or rarely slightly petaloid :

Leaves stipulate :

Stamens free or slightly connate at the base :

Calyx imbricate :

Stipules free from or adnate to the petiole ; fruits acheniolar drupaceous, often included by the tubular calyx ; disk usually present ; flowers hermaphrodite or polygamo-dioecious *Rosaceae.*

Stipules laterally adnate to the petiole ; fruits follicular ; disk absent ; flowers unisexual, dioecious *Cercidiphyllaceae.*

Stipules intrapetiolar, amplexicaul ; fruits follicular ; disk absent ; flowers unisexual, polygamo-monoecious *Lactoridaceae.*

Calyx valvate :

Leaves alternate, simple, covered with stellate hairs ; disk absent from the flowers, the latter hermaphrodite *Sterculiaceae.*

Leaves opposite or verticillate, usually compound ; disk present in the flowers, the latter dioecious ; male flowers with a rudimentary ovary *Brunelliaceae.*

Leaves opposite or verticillate, simple ; male flowers without a rudimentary ovary *Cunoniaceae.*

Stamens united into a column ; anthers in a ring or unequally arranged *Sterculiaceae.*

Leaves exstipulate :

Leaves compound ; stamens often 6 and monadelphous *Lardizabalaceae.*

Leaves simple :

Seeds with ruminate endosperm ; stamens numerous, mostly with broad more or less truncate connective ; carpels usually numerous, free in fruit *Anonaceae.*

Seeds sometimes with ruminate endosperm ; stamens definite, often in 3's, with narrow connective ; carpels few, free ; mostly climbers *Menispermaceae.*

Seeds with uniform endosperm ; stamens usually with a narrow connective :

Stamens hypogynous :

Carpels in several series or in an irregular series, concrescent in fruit ; trees or shrubs with lepidote leaves *Himantandraceae.*

Carpels mostly 3, free ; woody climbers ; not lepidote *Menispermaceae.*
Carpels in a single series, free or nearly so in fruit ; mostly herbs ; not lepidote *Phytolaccaceae.*
Stamens more or less perigynous or on a widened or hollow receptacle :
Receptacle obscure and solid, bearing the stamens on its outside ; carpels in a single whorl, connate towards the base ; anthers opening lengthwise by slits *Trochodendraceae.*
Receptacle more or less hollow, bearing the stamens on its inside ; anthers often opening by valves *Monimiaceae.*
Herbs with radical or alternate leaves (or very soft wooded climbers with opposite leaves and rather broad medullary rays) :
Carpels usually numerous, achenial and 1-seeded in fruit or follicular with several seeds, often with long hairy tails ; flowers mostly hermaphrodite ; sepals usually petaloid, valvate or imbricate *Ranunculaceae.*
Carpels mostly few ; sepals not petaloid, sometimes rather scarious :
Flowers hermaphrodite ; stamens free amongst themselves ; leaves alternate :
Carpels in a single whorl ; sepals more or less free ; style terminal or nearly so :
Leaves not modified into pitchers *Phytolaccaceae.*
Leaves modified into pitchers *Cephalotaceae.*
Carpels in more than 1 whorl ; sepals free ; style terminal or nearly so *Ranunculaceae.*
Carpels 1-4 ; sepals united into a tube ; style basal or lateral *Rosaceae.*
Carpels 1-4 ; sepals free ; stigma terminal ; small annual herb *Circaeasteraceae.*
Flowers unisexual ; sepals usually biseriately imbricate ; stamens free or variously connate :
Climbers ; carpels mostly 3 or 6 *Menispermaceae.*
Low, often annual herbs ; fruiting carpels 5 *Molluginaceae.*

GROUP 4

One carpel or more than one united carpels with parietal placentation ; ovary superior ; petals present, free from each other

Leaves opposite (to p. 10) :
Stamens more or less united into three or more separate bundles ; leaves often gland-dotted or with resin canals :
Mostly herbaceous or suffruticose ; leaves often with pellucid dots ; styles free or nearly so *Hypericaceae.*
Trees or shrubs ; leaves with lines of resin canals and very numerous lateral nerves ; stigma sessile or subsessile *Guttiferae.*
Stamens free or more or less united at the base into not more than two separate bundles (diadelphous), sometimes adnate to a gynophore ; leaves not or rarely glandular :
Connective of the anthers produced above the cells ; flowers often somewhat zygomorphic (irregular), the lower petal often gibbous or saccate at the base *Violaceae.*
Connective of the anthers not produced ; flowers usually actinomorphic (regular) :
Stamens 6, tetradynamous ; sepals 4 ; petals 4, often clawed ; ovary of 2 carpels *Cruciferae.*
Stamens not tetradynamous, often many :
Stamens more than double the number of the petals :

Ovary stipitate :
Stamens hypogynous — *Capparidaceae.*
Stamens perigynous, inserted on the calyx-tube — *Lythraceae.*
Ovary sessile :
Petals and stamens hypogynous :
Sepals imbricate :
Style or sessile stigma 1 ; indumentum when present often stellate ; leaves not gland-dotted ; petals fugacious — *Cistaceae.*
Styles or sessile stigmas 2 or more ; leaves often gland-dotted — *Hypericaceae.*
Sepals induplicate-valvate ; leaves mostly subconnate at the base, often small and ericoid — *Frankeniaceae.*
Petals and stamens perigynous ; leaves not gland-dotted — *Samydaceae.*
Stamens the same or double the number of the petals :
Stamens and petals hypogynous ; style 1, divided into as many stigmas as placentas ; no corona :
Leaves small, often more or less connate at the base ; flowers usually sessile — *Frankeniaceae.*
Leaves not small, not connate at the base ; flowers stalked — *Flacourtiaceae.*
Stamens and petals perigynous ; no corona present :
Stamens not diadelphous ; flowers actinomorphic :
Styles free ; seeds with endosperm ; stamens erect in bud :
Herbs with fleshy exstipulate leaves ; carpels as many as the petals — *Crassulaceae.*
Shrubs with deciduous bark and thin leaves ; carpels fewer than the petals ; no gynophore — *Hydrangeaceae.*
Mostly climbers with tendrils ; leaves usually stipulate ; ovary on a gynophore — *Passifloraceae.*
Styles united ; seeds without endosperm ; stamens often inflexed in bud — *Lythraceae.*
Stamens diadelphous ; flowers zygomorphic — *Papilionaceae.*
Stamens hypogynous to perigynous ; corona present ; stamens adnate to a gynophore — *Passifloraceae.*
Leaves alternate or all radical :
Stamens numerous (more than 12) (to p. 12) :
Filaments connate into a tube or column :
Anthers free, small ; petals often valvate ; flowers mostly in heads or dense spikes — *Mimosaceae.*
Anthers extrorse, adnate to the tube ; glabrous aromatic trees ; leaves pellucid-punctate ; flowers cymose — *Canellaceae.*
Filaments connate into separate bundles :
Bundles of filaments opposite the sepals — *Tiliaceae.*
Bundles of filaments opposite the petals — *Samydaceae.*
Filaments free or partially adnate to a gynophore, or shortly connate only at the base :
Ovary supported on a gynophore — *Capparidaceae.*
Ovary sessile or very nearly so :
Anthers horseshoe-shaped ; ovary placentas 2 ; ovules numerous ; stipules caducous, leaving a wide scar ; leaves large ; pedicels often with 5 large glands below the sepals — *Bixaceae.*
Anthers straight or nearly so :
Anthers opening by apical pores or short pore-like slits :
Seeds hairy : ovary entire ; leaves digitately nerved or lobed — *Cochlospermaceae.*

Seeds not hairy ; ovary often deeply lobed, especially in fruit ; leaves pinnately nerved *Ochnaceae.*

Anthers opening by longitudinal slits :

Flowers actinomorphic (regular) :

Fleshy plants, often spiny and with reduced or fleshy leaves ; no stipules ; stigmas often many *Cactaceae.*

Above characters not associated :

Stipules present, sometimes early deciduous, free or adnate to the petiole :

Sepals contorted ; petals very fugacious, often 4 ; placentas 3-5, parietal or adnate to the partially intrusive septa *Cistaceae.*

Sepals imbricate or valvate ; petals often 5 :

Corona absent :

Ovary of more than 1 carpel, *i.e.* with 2 or more placentas :

Petals and stamens hypogynous :

Leaves simple ; sepals at length reflexed or deciduous *Flacourtiaceae.*

Leaves mostly pinnate ; sepals not or rarely reflexed, not deciduous *Anacardiaceae.*

Petals and stamens perigynous :

Sepals persistent, accrescent *Samydaceae.*

Sepals not accrescent or only very slightly so *Rosaceae.*

Ovary of 1 carpel and with 1 placenta ; stamens and petals hypogynous ; sepals persistent, very imbricate *Dilleniaceae.*

Corona present *Passifloraceae.*

Stipules absent :

Trees, shrubs or woody climbers :

Leaves simple :

Flowers mostly solitary ; endosperm of seeds ruminate ; stamens and petals hypogynous *Anonaceae.*

Flowers rarely solitary, sometimes spicate-racemose ; endosperm smooth :

Ovary wholly superior :

Leaves rather small or very small ; flowers often spicate or racemose *Tamaricaceae.*

Leaves rather large ; flowers rarely spicate *Flacourtiaceae.*

Ovary semi-inferior *Samydaceae.*

Leaves mostly bipinnate ; petals valvate ; calyx tubular, often valvate ; flowers often in heads or spikes *Mimosaceae.*

Herbs :

Sepals more than 2 ; juice not milky :

Leaves ternately compound ; sepals petaloid ; carpel 1, baccate in fruit *Ranunculaceae.*

Leaves pinnatisect ; sepals not petaloid, 4 ; petals 4, clawed ; ovary of 2 carpels *Cruciferae* (Megacarpaea).

Sepals 2 ; juice milky ; petals often 4, fugacious, not clawed ; ovary of more than 1 carpel *Papaveraceae.*

Flowers zygomorphic (irregular) :

Petals and stamens hypogynous ; petals often considerably modified ; ovary of 1 carpel *Ranunculaceae.*

Petals and stamens hypogynous or slightly perigynous ; petals mostly laciniate ; ovary of more than 1 carpel *Resedaceae.*

Petals and stamens perigynous or subperigynous ; petals not laciniate :
Fleshy plants with thick or reduced leaves ; ovary of more than 1 carpel *Cactaceae.*
Not fleshy ; leaves not reduced ; ovary of 1 carpel :
Odd petal adaxial *Papilionaceae.*
Odd petal not adaxial *Caesalpiniaceae.*
Stamens 12 or fewer :
Stamens 6, four long and two short (tetradynamous) ; sepals 4 ; petals 4 ; ovary of 2 carpels, often divided by a false septum *Cruciferae.*
Stamens not as above, rarely 6 :
Flowers markedly zygomorphic :
Stamens 4 or 6, opposite the petals, more or less united into 2 bundles ; inflorescence often leaf-opposed *Fumariaceae.*
Stamens with at least one row alternate with the petals :
Fertile stamens about 2 ; ovary often supported on a short or long gynophore :
Ovary of more than 1 carpel *Capparidaceae.*
Ovary of 1 carpel (1 placenta) ; leaves usually pinnate *Caesalpiniaceae.*
Fertile stamens more than 2 :
Fleshy plants with numerous petals *Cactaceae.*
Not fleshy :
Herbs or rarely shrubs or trees ; anthers often with produced connective, mostly connivent or connate around the style *Violaceae.*
Herbs, shrubs or trees ; anther connective not produced or only glandular :
Placentas 3 ; 5 fertile stamens, with the same number of staminodes *Moringaceae.*
Placenta 1 :
Odd petal adaxial ; corolla of standard, wings and keel (papilionaceous) *Papilionaceae.*
Odd petal not adaxial ; corolla not as above ; anthers opening by slits *Caesalpiniaceae.*
Odd petal not adaxial ; anthers opening by pores *Polygalaceae.*
Flowers actinomorphic (regular) or nearly so :
Parasitic leafless plants destitute of chlorophyll ; anthers elongated, opening lengthwise by slits *Monotropaceae.*
Not parasitic ; leaves more or less green :
Flowers with a distinct corona, this sometimes membranous or represented by a definite ring of hairs towards the base of the calyx-tube : ovary of more than 1 carpel :
Styles connate or continuous at the base, or style 1 :
Ovary 1-celled ; fruit opening loculicidally (if capsular) *Passifloraceae.*
Ovary imperfectly celled ; capsule opening septicidally ; leaves sheathing at base *Greyiaceae.*
Styles widely separated at the base ; calyx-tube long *Malesherbiaceae.*
Flowers without a corona :
Stamens completely united into a column with the anthers extrorse on the outside ; leaves pellucid-punctate ; endosperm not ruminate *Canellaceae.*
Stamens united with the anthers in a ring around the apex of the column ; leaves not punctate ; endosperm often ruminate *Menispermaceae.*
Stamens free or united only at the base or rarely only the anthers connivent :

Leaves stipulate :
Anthers with the connective produced above the cells :
Anthers connivent around the style or subsessile *Violaceae.*
Anthers not connivent around the style *Flacourtiaceae.*
Anthers without a produced connective :
Staminodes present, sometimes petaloid ; stipules sometimes pectinate *Ochnaceae.*
Staminodes absent :
Leaves with numerous very sticky gland-tipped hairs, mostly circinate in bud ; seeds not carunculate *Droseraceae.*
Leaves without sticky hairs, not circinate ; seeds often carunculate or arillate :
Styles free to the base *Turneraceae.*
Styles simple, shortly divided :
Mostly climbers with tendrils *Passifloraceae.*
Shrubs or trees without tendrils *Flacourtiaceae.*
Leaves exstipulate :
Stamens the same number as and opposite the petals :
Sepals and petals usually in threes ; anthers mostly opening by valves *Berberidaceae.*
Sepals and petals 2 and 4 respectively ; flowers solitary or terminal or leaf-opposed ; anthers opening by slits *Fumariaceae.*
Stamens with one row alternate with the petals :
Herbs :
Calyx-tube long ; stamens usually perigynous *Turneraceae.*
Calyx-tube short ; stamens hypogynous *Tovariaceae.*
Trees, shrubs or climbers :
Leaves simple, but sometimes deeply divided :
Leaves very small and more or less ericoid *Tamaricaceae.*
Leaves not small :
Leaves digitately lobed *Caricaceae.*
Leaves pinnately lobed or subdigitately nerved ; calyx-tube very short ; stamens hypogynous :
No staminodes *Pittosporaceae.*
Ring of staminodes outside the stamens *Greyiaceae.*
Leaves pinnately nerved or lobed ; calyx-tube long ; stamens mostly perigynous *Turneraceae.*
Leaves compound :
Flowers in heads or dense spikes ; petals valvate ; ovary of 1 carpel ; ovules more than 1 *Mimosaceae.*
Flowers not in heads or dense spikes ; ovary usually of more than 1 carpel ; ovule solitary *Anacardiaceae.*
Flowers racemose ; ovary of 5 carpels with numerous ovules *Caricaceae.*

GROUP 5

One carpel or two or more united carpels with parietal placentation ; ovary superior ; petals present, more or less united

Stamens free from the corolla-tube (to p. 14) :
Ovary composed of more than one carpel :
Stamens numerous, more than twice the number of the corolla-lobes :
Anthers opening by a longitudinal slit, with broadened truncate connective ; seeds with copious ruminate endosperm ; shrubs, trees or climbers with exstipulate simple leaves *Anonaceae.*

Anthers without a broadened connective ; fleshy plants with reduced leaves and often very spiny *Cactaceae.*
Anthers without a broadened connective ; not fleshy ; leaves coriaceous ; flowers spicate-racemose ; petals with induplicate margins *Samydaceae.*
Stamens definite in relation to the corolla-lobes ; anthers opening by terminal pores or pore ; leaves mostly opposite with parallel main nerves *Melastomaceae.*
Stamens 4, connate at the base or up to the middle ; anthers opening by a terminal pore ; leaves not parallel nerved, alternate *Polygalaceae.*
Stamens 5-12 ; anthers neither appendaged nor opening by pores ; leaves alternate or fasciculate, exstipulate ; erect trees or shrubs ; never aquatic :
Branches with hooks ; climbers *Ancistrocladaceae.*
Branches without hooks :
Leaves fairly large ; flowers more or less corymbose or paniculate :
Not spiny ; leaves not fasciculate *Pittosporaceae.*
Spiny shrubs ; leaves often fasciculate *Fouquieraceae.*
Leaves very small and scale-like ; flowers in slender spikes or racemes *Tamaricaceae.*
Stamens 5 ; glabrous aquatic herbs with verticillate leaves ; flowers axillary, solitary *Droseraceae.*
Ovary composed of a single carpel (usually a legume) ; stamens free or more usually diadelphous or monadelphous, often 10, rarely numerous :
Stamens connate into a sheath, or free ; flowers mostly hermaphrodite :
Flowers actinomorphic (regular) ; petals valvate ; calyx gamosepalous or valvate ; leaves usually bipinnate, rarely simply pinnate or reduced to phyllodes ; flowers often collected into heads *Mimosaceae.*
Flowers zygomorphic (irregular) or rarely actinomorphic ; sepals imbricate or rarely valvate ; petals imbricate, the upper (adaxial) one inside the others ; leaves often pinnate or bipinnate *Caesalpiniaceae.*
Flowers zygomorphic ; petals imbricate, the upper (adaxial) one (the standard) outside the others, the lateral two (the wings) outside the abaxial pair (the keel) which are more or less united along their lower edges ; leaves simple, digitate or simply pinnate *Papilionaceae.*
Stamens connate into a column with the anthers in a ring at the top ; flowers dioecious ; fruit a drupe ; slender climbers *Menispermaceae.*
Stamens inserted on the corolla-tube, sometimes near the base :
Stamens double the number of the corolla-lobes :
Flowers zygomorphic *Polygalaceae.*
Flowers actinomorphic *Caricaceae.*
Stamens the same number as the corolla-lobes ; corolla actinomorphic or nearly so :
Leaves opposite :
Carpels 2, more or less free ; pollen granular *Apocynaceae.*
Carpels 2, free ; styles separate up to the common thickened apex ; pollen agglutinated into masses ; corolla with a corona *Asclepiadaceae.*
Carpels 2, connate into a 1- or 2-celled ovary ; pollen not agglutinated :
Stamens 5 ; ovules numerous :
Corolla-lobes valvate *Gentianaceae.*
Corolla-lobes imbricate or contorted *Hydrophyllaceae.*
Stamens 4 ; ovules numerous *Bignoniaceae.*
Stamens 4 ; ovules 1-2 in each cell *Verbenaceae.*
Leaves alternate or radical :
Corolla-lobes without opposite glands ; flowers hermaphrodite :
Corolla-lobes imbricate or rarely contorted *Hydrophyllaceae.*

Corolla-lobes induplicate-valvate ; leaves simple or trifoliolate *Gentianaceae.*
Corolla-lobes with glands opposite to them ; flowers unisexual *Achariaceae.*
Stamens fewer than the corolla-lobes, 4 or 2 ; corolla zygomorphic or rarely subactinomorphic :
Leafless parasitic (on roots), never green herbs ; seeds minute, very numerous, with endosperm *Orobanchaceae.*
Leafy and not or rarely parasitic :
Ovules numerous on each placenta :
Mostly trees ; seeds transverse, winged *Bignoniaceae.*
Mostly herbaceous ; seeds minute, not winged *Gesneriaceae.*
Herbs ; seeds not winged *Pedaliaceae.*
Ovules 1-2 on each placenta ; stem and branches often 4-sided *Verbenaceae.*

GROUP 6

One carpel or more than one united carpels with parietal placentation ; ovary superior ; petals absent

Leaves modified into pitchers ; flowers dioecious ; stamens united into a column ; ovary 3-4-celled with numerous ovules in each cell ; seeds elongate-fusiform ; embryo straight *Nepenthaceae.*
Leaves not modified into pitchers :
Submerged aquatic moss- or alga-like herbs ; flowers dioecious ; ovules numerous in each cell ; seeds microscopic, compressed *Hydrostachyaceae.*
Not submerged, etc., as in preceding :
Stamens 6, four long and two short (tetradynamous) ; fruits often with a thin membranous false septum between the placentas ; seeds without endosperm, with accumbent or incumbent cotyledons ; sepals usually 4 *Cruciferae.*
Stamens rarely 6, and then not tetradynamous :
Stamens more than 1 (to p. 16) :
Ovary composed of 1 carpel ; fruit usually a legume :
Stamens more than 4 ; sepals not or rarely valvate :
Stamens 10 or fewer by abortion :
Leaves usually compound ; flowers zygomorphic *Caesalpiniaceae.*
Leaves mostly simple ; flowers actinomorphic :
Leaves stipulate :
Anthers erect in bud *Ulmaceae.*
Anthers inflexed in bud *Moraceae.*
Leaves exstipulate ; flowers in catkins *Leitneriaceae.*
Stamens numerous :
Flowers zygomorphic ; fruit mostly a legume *Papilionaceae.*
Flowers actinomorphic ; fruit a berry *Flacourtiaceae.*
Stamens 4, opposite the valvate calyx-segments *Proteaceae.*
Ovary composed of more than 1 carpel ; at least with 2 or more placentas or more than 1 ovule :
Ovary and fruit stipitate :
Flowers not in catkins :
Stamens more than 4 ; sepals rarely valvate *Capparidaceae.*
Stamens 4 ; sepals valvate, often coloured *Proteaceae.*
Flowers in catkins *Salicaceae.*

Ovary sessile :
Flowers without a corona but sometimes with a hypogynous disk :
Stamens hypogynous or flowers unisexual :
Filaments connate into a tube, anthers up to 20, adnate to the outside of the tube ; leaves pellucid-punctate *Canellaceae.*
Filaments free or slightly connate at the base :
Seeds with endosperm :
Leaves opposite ; mostly shrubs ; stipules mostly present *Cistaceae.*
Leaves alternate ; trees or shrubs ; stipules small, caducous or absent *Flacourtiaceae.*
Leaves alternate ; more or less herbaceous ; with large pinnately or digitately nerved leaves ; flowers paniculate ; no stipules *Papaveraceae.*
Seeds without endosperm ; torus not dilated ; fruit a capsule ; branches leafy *Salicaceae.*
Seeds without endosperm ; torus dilated at the back ; stamens 10-20 ; fruit a berry ; often spiny shrubs more or less aphyllous *Resedaceae.*
Stamens distinctly perigynous :
Anthers inflexed in bud ; staminodes rarely present ; filaments free *Lythraceae.*
Anthers not inflexed in bud ; staminodes often alternating with the fertile stamens ; filaments free or connate ; indumentum sometimes stellate *Samydaceae.*
Anthers not inflexed in bud ; no staminodes ; stamens 4, opposite the valvate sepals *Proteaceae.*
Flowers with a distinct corona, more or less perigynous *Passifloraceae.*
Stamen 1 :
Stems not articulated ; leaves well developed ; flowers hermaphrodite, spicate ; anther erect in bud *Lacistemaceae.*
Stems articulated ; leaves reduced to scales ; flowers unisexual, male spicate ; anther inflexed in bud *Casuarinaceae.*

GROUP 7

One carpel or two or more united carpels with parietal placentation ; ovary inferior ; petals present, free from each other

Aquatic herbs with usually floating leaves ; petals numerous in several series ; fruit a several-celled berry *Nymphaeaceae.*
Not aquatic, rarely marsh plants :
Flowers hermaphrodite :
Anthers opening by pores ; leaves mostly opposite with parallel main nerves ; stamens definite, often double the number of the petals *Melastomaceae.*
Anthers not opening by pores :
Ovary-cells not superposed :
Stamens numerous, more than twice as many as the petals :
Shrubs or trees with gland-dotted mostly opposite leaves *Myrtaceae.*
Leaves not gland-dotted, sometimes reduced or fleshy :
Fleshy herbs or shrubs with reduced leaves *Cactaceae.*
Herbs with rough hairs ; stamens often in bundles opposite the petals *Loasaceae.*
Trees or shrubs :
Sepals gradually passing into the petals ; endosperm ruminate *Eupomatiaceae.*

Sepals distinct from the petals — *Samydaceae.*
Stamens 4-12 ; shrubs or trees ; calyx imbricate or valvate :
Leaves alternate :
Leaves often gland-dotted, not stipulate — *Escalloniaceae.*
Leaves not glandular, mostly stipulate — *Grossulariaceae.*
Leaves opposite, not stipulate — *Hydrangeaceae.*
Stamens definite ; usually herbs or weak climbers :
Sepals and petals imbricate — *Saxifragaceae.*
Sepals valvate ; petals contorted ; ovary usually 4-celled — *Onagraceae.*
Sepals imbricate or valvate ; petals imbricate or induplicate-valvate ; herbs or climbers with often rough stinging hairs — *Loasaceae.*
Ovary-cells superposed in two series ; leaves opposite or subopposite — *Punicaceae.*
Flowers unisexual :
Leaves gland-dotted ; style simple — *Myrtaceae.*
Leaves not gland-dotted ; styles or stigmas usually 3 :
Stamens numerous ; leaves stipulate ; no tendrils ; ovary closed, often winged — *Begoniaceae.*
Stamens 3 or 5 ; no stipules ; often with tendrils ; ovary closed — *Cucurbitaceae.*
Stamens 4 to many ; stipules absent ; no tendrils ; ovary often gaping — *Datiscaceae.*

GROUP 8

One carpel or two or more united carpels with parietal placentas ; ovary inferior ; petals present, more or less united

Stamens numerous ; leaves often gland-dotted, mostly opposite — *Myrtaceae.*
Stamens usually definite, rarely numerous, rarely more than twice the number of the corolla-lobes :
Fleshy plants (often) usually with minute leaves ; calyx-lobes, petals and stamens numerous ; style radiate at the apex — *Cactaceae.*
Above characters never combined ; stamens mostly the same number, double or fewer than the petals :
Flowers unisexual ; leaves alternate ; tendrils often present ; stamens mostly 3 ; anthers often twisted — *Cucurbitaceae.*
Flowers hermaphrodite ; leaves opposite or verticillate, without stipules ; anthers mostly opening by terminal pores — *Melastomaceae.*
Flowers hermaphrodite very rarely unisexual ; leaves opposite or alternate, often stipulate ; anthers not opening by pores, sometimes connivent at the apex :
Leaves with interpetiolar or intrapetiolar stipules ; flowers actinomorphic ; stamens usually the same number as the corolla-lobes :
Ovules numerous on the walls of the ovary ; branches not hooked — *Rubiaceae.*
Ovule solitary ; branches hooked — *Ancistrocladaceae.*
Leaves exstipulate (sometimes the leaves anisophyllous, the smaller appearing like a stipule) :
Evergreen trees or shrubs ; corolla subactinomorphic ; stamens 2, with very broad connective and sinuous anther-cells — *Columelliaceae.*
Shrubs ; corolla actinomorphic ; stamens numerous, with narrow connective ; anther-cells straight — *Samydaceae.*
Usually herbaceous, rarely subwoody plants ; corolla more or less zygomorphic :
Stamens 4 or 2, often didynamous — *Gesneriaceae.*
Stamens numerous ; plants often roughly hairy — *Loasaceae.*

GROUP 9

One carpel or two or more united carpels with parietal placentas ; ovary inferior ; petals absent

Leaves gland-dotted, opposite or alternate ; stipules absent ; stamens numerous ; shrubs or trees rarely herbaceous — *Myrtaceae.*

Leaves not gland-dotted or the leaves reduced to scales ; mostly herbs :

Root parasites with scale-like leaves ; stamens monadelphous :

Flowers unisexual — *Cytinaceae.*

Flowers hermaphrodite — *Hydnoraceae.*

Not as above :

Leaves alternate :

Leaves stipulate, stipules sometimes adnate to the petiole :

Flowers hermaphrodite :

Inflorescence not leaf-opposed ; calyx present — *Saxifragaceae.*

Inflorescence leaf-opposed ; calyx absent — *Saururaceae.*

Flowers unisexual ; stamens usually numerous ; ovary often winged — *Begoniaceae.*

Leaves exstipulate ; ovary often gaping at the top ; stamens 4 to many ; calyx not unilateral — *Datiscaceae.*

Leaves exstipulate ; ovary closed at the top ; stamens 6 to many ; calyx unilateral, coloured ; climbers — *Aristolochiaceae.*

Leaves opposite, ericoid ; flowers glomerate — *Grubbiaceae.*

GROUP 10

One carpel or two or more united carpels with axile, basal or apical placentation ; ovary superior ; petals present, free from each other

Perfect stamens the same number as the petals and opposite to them ; leaves alternate or rarely opposite or all radical (to p. 19) :

Leaves not gland-dotted ; petals and stamens more or less hypogynous or subperigynous ; disk usually conspicuous :

Calyx-lobes or sepals imbricate :

Petals imbricate or biseriately imbricate :

Ovary 1-celled ; ovules basal :

Petals often biglandular towards the base ; ovules few ; leaves simple or compound ; anthers opening by valves — *Berberidaceae.*

Petals not glandular at the base ; anthers opening by longitudinal slits :

Ovules more than 1 in the ovary — *Primulaceae.*

Ovule 1 in the ovary — *Portulacaceae.*

Ovary 2-3-celled ; ovules 2 in each cell, horizontal or pendulous ; stamens 4-5, sometimes about 2 only bearing anthers ; no petaloid staminodes — *Sabiaceae.*

Ovary 1-2-celled ; ovule solitary, pendulous from near the top :

Sepals free or only shortly united :

Stamens alternating with petaloid staminodes — *Corynocarpaceae.*

No staminodes ; shrubs or small trees — *Samydaceae.*

Sepals united high up ; leaves often crowded ; mostly undershrubs — *Thymelaeaceae.*

Petals valvate, mostly climbers with swollen nodes and leaf-opposed inflorescences — *Ampelidaceae.*

Calyx-lobes valvate :
Disk absent from the flowers :
Trees and shrubs or rarely herbs ; flowers not scapose :
Leaves stipulate ; stamens hypogynous *Sterculiaceae.*
Leaves exstipulate ; stamens perigynous *Lythraceae.*
Herbs, mostly with rosettes of leaves ; flowers in scapose inflorescences *Plumbaginaceae.*
Disk present, perigynous ; leaves mostly stipulate ; ovary 2-4-celled ; ovules erect ; seeds mostly with copious endosperm and large straight embryo *Rhamnaceae.*
Disk present ; leaves exstipulate :
Ovules erect *Olacaceae.*
Ovules pendulous *Opiliaceae.*
Leaves pellucid-punctate :
Leaves simple, without stipules ; ovules numerous ; trees or shrubs ; no tendrils :
Petals and stamens hypogynous ; ovary 1-celled ; ovules numerous on a free-central placenta *Myrsinaceae.*
Petals and stamens perigynous ; ovary 2-3-celled ; ovules numerous on an axile placenta *Heteropyxidaceae.*
Leaves mostly compound, usually stipulate ; inflorescence leaf-opposed ; ovules 1-2 in each cell ; mostly climbers with tendrils *Ampelidaceae.*
Perfect stamens the same number as the petals and alternate with them or more numerous, very rarely fewer :
Stamens 6, tetradynamous (4 long and 2 short) ; flowers usually actinomorphic (regular) ; petals 4, often clawed ; placentas 2 *Cruciferae.*
Stamens not as above, rarely 6 :
Style basal ; stipules mostly persistent :
Leaves simple ; stamens numerous ; stomata of the leaves usually with special subsidiary cells *Rosaceae.*
Leaves pinnate ; stamens 10 ; disk large *Simarubaceae.*
Style or styles terminal or subterminal, sometimes gynobasic :
Flowers markedly zygomorphic (irregular) (to p. 20) :
Stamens definite in number, 12 or fewer :
Lower sepal not spurred ; sepals 5, the inner 2 larger and often petaloid wing-like ; anthers often opening by an apical pore ; seeds mostly with endosperm *Polygalaceae.*
Lower sepal not spurred ; sepals 4-5 or rarely up to 12, subequal ; anthers opening by longitudinal slits ; seeds mostly with copious endosperm *Saxifragaceae.*
Lower sepal subsaccate ; trees or shrubs with pinnate stipulate leaves ; stamens 4-5, free, inserted within the disk *Melianthaceae.*
Lower sepal more or less elongated into a spur :
Sepals usually 3 ; anthers connivent around the ovary, opening lengthwise ; seeds without endosperm *Balsaminaceae.*
Sepals 5, anthers free, opening lengthwise ; seeds usually without endosperm :
Stamens about 8 ; leaves alternate *Tropaeolaceae.*
Stamens 3-12, unilateral ; leaves sometimes opposite *Trigoniaceae.*
Stamens 1-2 (rarely a few staminodes) ; leaves opposite *Vochysiaceae.*
Stamens more than 12 :
Stamens and petals hypogynous *Tamaricaceae.*
Stamens and petals perigynous or epigynous *Rosaceae.*

Flowers actinomorphic or very slightly zygomorphic :
Stamens united into more than one separate bundle (phalanges) often opposite the petals :
Leaves opposite, often gland-dotted or with resinous lines, exstipulate ; calyx imbricate :
Herbs or shrubs ; styles free from the base or nearly so ; flowers hermaphrodite *Hypericaceae.*
Trees or shrubs ; styles mostly more or less united or stigma one and sessile or subsessile ; flowers mostly unisexual *Guttiferae.*
Leaves alternate (or if opposite then stipulate) or all radical :
Sepals imbricate :
Trees or shrubs :
Flowers hypogynous :
Leaves neither very small nor fleshy *Theaceae.*
Leaves often small and crowded or fleshy *Tamaricaceae.*
Flowers perigynous : *Samydaceae.*
Herbs or very small undershrubs :
Ovary with a long beak ; carpels 5, completely united *Geraniaceae.*
Ovary with the carpels only partially united ; carpels 3 *Dilleniaceae.*
Sepals valvate ; hairs on the leaves, etc., often stellate :
Stamens free or monadelphous, or if united into bundles then some sterile *Sterculiaceae.*
Stamens in separate bundles, all fertile *Tiliaceae.*
Stamens free or at least not united into several bundles, sometimes more or less united at the base or into one bundle (monadelphous) :
Leaves opposite or verticillate or rarely fasciculate, never all radical nor completely reduced (to p. 24) :
Leaves compound, rarely unifoliolate and then with a distinctly tumid petiole, sometimes sessile (to p. 21) :
Stamens numerous, more than twice the number of the petals :
Leaves digitate :
Leaves large ; flowers in terminal racemes *Caryocaraceae.*
Leaves very small, sessile ; flowers axillary, solitary *Saxifragaceae.*
Leaves pinnate ; petals and stamens subhypogynous *Eucryphiaceae.*
Stamens definite, not more than twice as many as the petals ; disk usually present :
Leaves gland-dotted ; disk usually present between the stamens and ovary ; ovary often deeply lobed ; cells 2-ovuled ; ovules pendulous ; stipules rarely present *Rutaceae.*
Leaves not gland-dotted, sometimes fleshy :
Leaves stipulate (to p. 21) :
Ovules pendulous from the central axis, 2 or more in each cell ; disk often fleshy, rarely absent :
Stipules persistent and often paired ; shrubs or herbs ; leaves mostly 2-foliolate or pinnate ; filaments often with a scale or gland attached to the base *Zygophyllaceae.*
Stipules often deciduous ; leaves 3-8-foliolate ; disk perigynous *Cunoniaceae.*
Ovule pendulous, solitary in each cell ; disk usually within the stamens ; trees or shrubs ; leaves mostly pinnate ; filaments nude, pilose or with a scale at the base *Simarubaceae.*
Ovules ascending ; stamens inserted outside the disk *Staphyleaceae.*

Leaves exstipulate :
Stamens with free filaments, mostly twice as many as the petals :
Leaves digitately 3-foliolate, sessile *Saxifragaceae.*
Leaves pinnate, stalked :
Ovules mostly 2 in each cell *Burseraceae.*
Ovule 1 in each cell *Simarubaceae.*
Stamens with more or less connate filaments, often double the number of the petals *Meliaceae.*
Stamens free, fewer than the petals ; ovules 2 or rarely up to 8 *Oleaceae.*
Stamens as many as the petals, free ; ovules numerous in each cell, at least more than 2 *Staphyleaceae.*
Stamens as many as or more than the petals ; ovules 2 in each cell, collateral; ovary compressed contrary to the septum *Aceraceae.*
Leaves simple, but sometimes deeply and variously divided :
Ovary stipitate on a gynophore ; stamens usually numerous, mostly more than twice as many as the petals, or if fewer then leaves gland-dotted ; seeds without endosperm or very little ; petals often clawed :
Leaves not gland-dotted :
Ovules on the walls or on the intrusive septa *Capparidaceae.*
Ovules on the central axis or from the base of the ovary *Caryophyllaceae.*
Leaves gland-dotted *Rutaceae.*
Ovary sessile or rarely very slightly stipitate :
Stamens more than twice as many as the petals (to p. 22) :
Calyx imbricate or calyptrate (to p. 22) :
Sepals mostly 2, caducous ; petals 4, often crumpled in bud ; filaments free *Papaveraceae.*
Sepals more than 2, mostly persistent ; petals usually 5 :
Stipules absent :
Stamens united into 5 bundles which are connate nearly to the top ; style single *Hypericaceae.*
Stamens free or united into a mass ; flowers usually dioecious or polygamous :
Leaves opposite, not fasciculate ; not spiny *Guttiferae.*
Leaves fasciculate ; spiny fleshy shrubs *Didiereaceae.*
Stipules present :
Leaves pinnately nerved :
Stamens free or very shortly connate only at the base ; styles 2-3, free ; leaves with numerous very fine transverse veins ; stipules mostly paired, lateral, rigid ; flowers paniculate or fascicled *Quiinaceae.*
Stamens free, very numerous :
Styles 5-12 ; leaves with small caducous intrapetiolar stipules ; flowers solitary, showy *Eucryphiaceae.*
Styles 20-25 ; ovary with as many cells ; flowers paniculate *Medusagynaceae.*
Style 1 ; stigma 3-lobed *Theaceae.*
Stamens 10-15, free ; style with 2-6 stigmas ; leaves rather fleshy, with small persistent stipules ; flowers in cymes *Zygophyllaceae.*
Leaves with 3 or more longitudinally parallel nerves *Melastomaceae.*

Calyx valvate :
Stamens free or very shortly connate at the base :
Stamens not inflexed in bud :
Stipules paired, not interpetiolar — *Tiliaceae.*
Stipules single, interpetiolar — *Rhizophoraceae.*
Stamens inflexed in bud :
Leaves stipulate ; indumentum often stellate — *Euphorbiaceae.*
Leaves exstipulate ; indumentum rarely stellate :
Flowers sometimes large and showy, clawed ; ovary few-celled — *Lythraceae.*
Flowers with small sessile petals ; ovary many-celled — *Sonneratiaceae.*
Stamens monadelphous or in fascicles opposite the petals, the latter contorted or imbricate ; leaves usually stipulate ; hairs often stellate — *Sterculiaceae.*
Stamens not more than twice as many as the petals :
Trees, shrubs or woody climbers (to p. 24) :
Leaves stipulate, sometimes stipules rudimentary or of hairs (to p. 23):
Stipules intrapetiolar, often connivent into one or adnate to the petiole :
Sepals not glandular outside and not accrescent in fruit ; hairs not medifixed — *Erythroxylaceae.*
Sepals usually glandular outside or accrescent in fruit ; hairs medifixed ; leaves often biglandular at the base — *Malpighiaceae.*
Stipules not intrapetiolar, sometimes rudimentary :
Disk absent or inconspicuous or of separate glands ; calyx often glandular :
Stamens free or shortly united only at the base :
Calyx mostly with a pair of glands outside ; trees, shrubs or climbers ; filaments of stamens without a scale — *Malpighiaceae.*
Calyx not glandular ; anther-cells collateral :
Mostly herbaceous ; filaments of stamens often with a scale attached — *Zygophyllaceae.*
Trees or shrubs ; filaments without a scale — *Cunoniaceae.*
Calyx not glandular ; anther-cells back to back ; trees or shrubs ; filaments without a scale ; petals 4 ; stamens 4 — *Salvadoraceae.*
Stamens united into a long tube ; sepals not glandular ; ovary 5-celled with 2 ovules in each ; calyx valvate — *Rhizophoraceae.*
Disk present, conspicuous ; calyx not glandular :
Flowers hermaphrodite :
Stamens inserted on or below the margin of the disk ; filaments subulate :
Stamens 3-5 — *Celastraceae.*
Stamens 8-10 — *Rhizophoraceae.*
Stamens usually 3, inserted on the disk ; filaments flattened or connivent, often adnate to the ovary — *Hippocrateaceae.*
Flowers unisexual ; ovules pendulous from the apex of the cell :
Seeds often carunculate; flowers rarely in heads — *Euphorbiaceae.*
Seeds not carunculate ; flowers arranged in dense heads ; hairs stellate — *Hamamelidaceae.*

Leaves exstipulate or stipules gland-like :
Stamens united into a tube :
Stamens more than 4 ; flowers hermaphrodite *Meliaceae.*
Stamens 4 ; flowers unisexual *Guttiferae.*
Stamens free or very shortly united only at the base :
Anthers opening at the apex by a pore ; stamens as many as or twice as many as the petals :
Leaves often with 3-9 longitudinally parallel nerves ; anthers often appendaged at the base *Melastomaceae.*
Leaves without parallel nerves ; anthers not appendaged at the base *Tremandraceae.*
Anthers opening by slits lengthwise :
Ovules numerous in each cell :
Petals and stamens hypogynous ; flowers hermaphrodite *Pittosporaceae.*
Petals and stamens hypogynous ; flowers unisexual *Guttiferae.*
Petals and stamens perigynous ; flowers hermaphrodite *Lythraceae.*
Ovules few in each cell :
Sepals 2-glandular outside ; hairs (when present) on the leaves medifixed ; shrubs or climbers :
Fruits usually winged ; styles often 3 *Malpighiaceae.*
Fruits drupaceous ; style one *Simarubaceae.*
Sepals not glandular ; hairs not medifixed :
Ovules pendulous from the apex of the cells :
Sepals imbricate or open :
Sepals free or calyx-tube very short :
Stamens hypogynous :
Petals imbricate *Linaceae.*
Petals valvate *Icacinaceae.*
Stamens perigynous :
Ovary 5-celled ; ovules 2 in each *Escalloniaceae.*
Ovary 4-celled ; ovule solitary *Cunoniaceae.*
Sepals connate into a long or rather long tube *Thymelaeaceae.*
Sepals valvate :
Stamens hypogynous *Tremandraceae.*
Stamens perigynous *Combretaceae.*
Ovules erect or ascending from the base of the cells :
Calyx imbricate :
Filaments subulate or filiform :
Leaves mostly palmately lobed, or if not so then disk absent ; ovary and fruit flattened contrary to the septum *Aceraceae.*
Leaves pinnately lobed ; disk present :
Flowers hermaphrodite *Celastraceae.*
Flowers dioecious or polygamous *Guttiferae.*
Filaments flattened *Hippocrateaceae.*
Calyx valvate ; stamens 3-5 ; style short :
Leaves not gland-dotted :
Sepals free or nearly so *Anacardiaceae.*
Sepals united into a long tube ; the 2 posticous petals often larger than the others *Lythraceae.*
Leaves gland-dotted *Rutaceae.*

Herbs, sometimes slightly woody at the base :
Ovary incompletely septate with free-central or basal placentation ; leaves mostly stipulate :
Sepals the same number as the petals, 3-5, free or connate ; petals 3-5, often clawed *Caryophyllaceae.*
Sepals the same number as the petals but often with as many accessory lobes, connate into a tube ; stamens inflexed in bud *Lythraceae.*
Sepals fewer than the petals, usually 2 ; petals 4-5 or more *Portulacaceae.*
Ovary completely septate :
Leaves stipulate :
Stipules paired :
Branches not articulate ; ovules numerous, attached to the central axis *Elatinaceae.*
Branches usually not articulated ; ovules few, pendulous ; sepals often unequal *Geraniaceae.*
Branches articulated ; ovules few, pendulous or ascending ; sepals equal *Zygophyllaceae.*
Stipules solitary, sometimes minute :
Stamens distinctly perigynous ; capsule circumscissile *Ficoidaceae.*
Stamens hypogynous, or slightly perigynous :
Ovules pendulous ; fruit a capsule or drupe, not circumscissile *Linaceae.*
Ovules basal or axile and spreading ; fruit a valvular capsule, not circumscissile *Molluginaceae.*
Leaves exstipulate :
Leaves with 3 or more longitudinally parallel nerves ; anthers usually appendaged and opening by a terminal pore *Melastomaceae.*
Leaves not as above ; anthers opening by longitudinal slits :
Stamens hypogynous or nearly so *Molluginaceae.*
Stamens perigynous :
Anthers erect in bud *Ficoidaceae.*
Anthers inflexed in bud *Lythraceae.*
Leaves alternate or all radical :
Stamens more than twice the number of the sepals or petals (to p. 27) :
Sepals valvate or open in bud (to p. 25) :
Anthers 2-celled (to p. 25) :
Anthers narrowly horseshoe-shaped, the cells bent on themselves *Gonystylaceae.*
Anthers straight :
Stamens free or slightly united only at the base :
Petals and stamens hypogynous or flowers unisexual :
Stipules present :
Flowers hermaphrodite ; indumentum often stellate *Tiliaceae.*
Flowers unisexual ; indumentum rarely stellate *Euphorbiaceae.*
Stipules absent ; calyx cupular ; stamens in several series ; anthers opening by a pore or short slit *Scytopetalaceae.*
Petals and stamens perigynous or epigynous :
Leaves stipulate ; stipules mostly paired ; ovary 2-celled ; styles subulate, free *Hamamelidaceae.*
Leaves exstipulate :
Anthers inflexed in bud ; calyx tubular *Lythraceae.*

Anthers erect in bud :
Leaves simple ; wood not resinous :
Ovary incompletely septate, wholly superior *Olacaceae.*
Ovary completely septate, partly inferior *Styracaceae.*
Leaves compound or unifoliolate ; wood resinous *Anacardiaceae.*
Stamens more or less united into a tube or into bundles, hypogynous ; indumentum usually stellate :
Anthers opening longitudinally *Sterculiaceae.*
Anthers opening by pore-like short slits *Scytopetalaceae.*
Anthers 1-celled ; stamens monadelphous ; calyx with or without an epicalyx :
Trees or rarely shrubs ; leaves digitately compound or simple ; carpels not or very rarely splitting away from the central axis in fruit *Bombacaceae.*
Mostly herbs ; leaves simple ; carpels often splitting away from the central axis or becoming free in fruit *Malvaceae.*
Sepals imbricate or rarely completely connate or calyptrate or cupulate :
Anthers narrowly horseshoe-shaped, the cells bent on themselves *Gonystylaceae.*
Anthers straight :
Petals and stamens perigynous :
Leaves stipulate :
Seeds with endosperm and a curved embryo ; mostly herbs *Portulacaceae.*
Seeds without endosperm or with very little :
Ovary with usually more than 2 carpels or sometimes only one ; flowers not or very rarely capitate *Rosaceae.*
Ovary of 2 carpels ; flowers often capitate *Hamamelidaceae.*
Leaves exstipulate :
Stamens free from the petals :
Flowers not capitate :
Petals not crumpled in bud ; ovules pendulous from the apex of the cells :
Leaves stipulate *Rhizophoraceae.*
Leaves without stipules *Samydaceae.*
Petals often crumpled in bud ; ovules basal or from the inner angle of the cell ; sepals valvate *Lythraceae.*
Flowers capitate, asymmetric ; involucre coloured *Hamamelidaceae.*
Stamens inserted on the base of the petals *Styracaceae.*
Petals and stamens more or less hypogynous or flowers unisexual ; disk often present :
Trees, shrubs or woody climbers (to p. 27) :
Leaves compound or rarely unifoliolate and then with a tumid petiole (to p. 26) :
Leaves pinnate ; petals not calyptrate :
Ovule ascending :
Leaves gland-dotted ; style or styles central *Rutaceae.*
Leaves rarely gland-dotted ; styles or stigmas often separated :
Wood resinous *Anacardiaceae.*
Wood not resinous, not bitter *Sapindaceae.*
Wood not resinous, very bitter *Simarubaceae.*
Ovule or ovules pendulous :
Stamens free ; wood with resin ducts *Anacardiaceae.*

Stamens more or less free from one another; wood without resin ducts *Simaroubaceae.*
Stamens united into a tube *Meliaceae.*
Leaves digitate 3-5-foliolate; petals calyptrately connate; styles short, 8-20; embryo spiral *Caryocaraceae.*
Leaves simple:
Leaves stipulate:
Flowers unisexual:
Disk present *Euphorbiaceae.*
No disk *Flacourtiaceae.*
Flowers hermaphrodite:
Torus enlarged after flowering; ovary mostly deeply lobed, the carpels becoming separated in fruit; anthers often opening by pores *Ochnaceae.*
Torus not enlarged:
Ovary stipitate; sepals more or less connate into a tube *Capparidaceae.*
Ovary sessile; sepals usually free:
Sepals 3; stipules caducous; flowers cymose or paniculate; petals contorted; stamens 10 or more, inside a ring of staminodes; ovary 3-celled; Mascarene Islands *Chlaenaceae.*
Sepals 5; no staminodes:
Calyx enlarged and wing-like in fruit:
Flowers mostly rather small and not showy; petals much contorted *Dipterocarpaceae.*
Flowers showy; ovary 1-celled with a basal placenta *Ochnaceae.*
Calyx not enlarged; leaves digitately lobed; flowers handsome; anthers opening by short pore-like confluent slits at the apex; petals imbricate or slightly contorted *Cochlospermaceae.*
Leaves not stipulate:
Ovary and fruit stipitate *Capparidaceae.*
Ovary and fruit not stipitate:
Seeds arillate; ovary composed of 1 carpel; leaves mostly with very prominent pinnately parallel lateral nerves; stamens usually persistent *Dilleniaceae.*
Seeds not arillate; ovary usually composed of 2 or more carpels:
Sterile flowers with modified pitcher-like saccate or spurred bracts *Marcgraviaceae.*
Sterile flowers not present; no modified bracts:
Ovary 1-celled, composed of 1 carpel:
Stamens more than 10, free:
Leaves pellucid-punctate, rather large and coriaceous *Winteraceae.*
Leaves usually very small and crowded *Tamaricaceae.*
Ovary 2- or more-celled:
Anthers basifixed; seeds usually few *Theaceae.*
Anthers versatile; seeds numerous, small:
Climbers; flowers often unisexual; sepals scarcely imbricate; styles numerous, free *Actinidiaceae.*
Erect trees or shrubs; flowers mostly hermaphrodite;

sepals very much imbricate ; styles 3-5, free or connate at the base ; anthers opening by pores *Saurauiaceae.*
Trees or shrubs ; flowers hermaphrodite ; style simple, slender, entire or minutely dentate *Humiriaceae.*
Anthers versatile ; seed solitary ; leaves fasciculate ; spiny plants *Didiereaceae.*
Herbs, rarely somewhat woody at the base :
Carpels not sunk in the torus :
Leaves neither sticky glandular, setose-ciliate, nor modified into pitchers :
Anthers opening by longitudinal slits :
Stamens quite free from one another :
Sepals more than 2 *Ranunculaceae.*
Sepals 2 *Portulacaceae.*
Stamens connate at the base ; leaves pinnate *Oxalidaceae.*
Anthers opening by a short pore-like terminal slit *Cochlospermaceae.*
Leaves very sticky glandular or ciliate with setose teeth, not modified into pitchers. *Droseraceae.*
Leaves modified into tubes or pitchers ; stamens numerous, free ; ovary 3-5-celled ; ovules numerous *Sarraceniaceae.*
Carpels sunk in the torus ; aquatic plants with peltate leaves *Nymphaeaceae.*
Stamens definite in number in relation to the sepals or petals, often the same number or twice as many or fewer :
Leaves compound, rarely unifoliolate and then with a distinctly tumid petiole (to p. 28) :
Stamens united into a tube ; leaves pinnate or rarely unifoliolate :
Leaves exstipulate *Meliaceae.*
Leaves with intrapetiolar stipules *Melianthaceae.*
Stamens free or united only at the base :
Leaves stipulate :
Herbaceous or slightly woody ; leaves digitately or pinnately compound :
Stamens without a scale at the base of the filaments ; flowers actinomorphic *Oxalidaceae.*
Stamens with a scale at the base of the filaments ; flowers actinomorphic *Zygophyllaceae.*
Stamens without a scale at the base ; flowers more or less zygomorphic *Melianthaceae.*
Trees, shrubs or climbers :
Ovules pendulous ; stipules convolute, axillary, often very long ; leaves mostly simple *Simarubaceae.*
Ovules ascending ; leaves compound ; habit often climbing :
Stipules lateral *Sapindaceae.*
Stipules intrapetiolar *Melianthaceae.*
Leaves exstipulate :
Leaves gland-dotted *Rutaceae.*
Leaves not gland-dotted :
Ovules pendulous from towards the apex of the cells :
Ovules 8-12, 2-seriate ; flowers small, paniculate *Meliaceae.*
Ovules solitary or collateral :
Ovary of more than 1 carpel ; wood mostly resinous *Burseraceae.*
Ovary of more than 1 carpel ; wood with bitter bark but not resinous *Simarubaceae.*

Ovary of 1 carpel; wood resinous . *Anacardiaceae.*
Ovules paired, superposed *Akaniaceae.*
Ovules ascending or horizontal:
Ovules numerous on axile placentas, horizontally spreading; sepals, petals and stamens 8, rarely 5; leaves trifoliolate; stigmas sessile, 8-rayed *Tovariaceae.*
Ovules mostly few or one; above characters not associated:
Herbs with sensitive leaves *Oxalidaceae.*
Trees or shrubs:
Ovules mostly 2 in each cell, superposed; styles various . *Rutaceae.*
Ovules about 8 in each cell; style 1 *Meliaceae.*
Ovules 2 in each cell, collateral; style simple *Connaraceae.*
Ovules 1 or more in each cell, erect or ascending; style simple or divided *Sapindaceae.*
Ovule 1 in each cell; style lobed or styles separate; wood with resin ducts *Anacardiaceae.*
Leaves simple, rarely completely reduced:
Anthers opening by valves:
Leafless parasitic herbs on roots of trees *Monotropaceae.*
Leafy trees or shrubs; but sometimes leafless at time of flowering:
Ovary composed of 2 carpels; stipules often present, mostly paired; flowers often capitate *Hamamelidaceae.*
Ovary composed of 1 carpel; stipules absent *Lauraceae.*
Anthers opening by apical pores:
Leaves with 3 or more longitudinally parallel main nerves; connective of the anthers often produced at the base *Melastomaceae.*
Leaves pinnately nerved or nerveless:
Petals induplicate-valvate; ovary 2-celled; anthers 2- or 4-celled *Tremandraceae.*
Petals imbricate or contorted:
Ovary deeply lobed; torus enlarging in fruit and the carpels often becoming separate; ovules 1-2 in each cell *Ochnaceae.*
Ovary not deeply lobed; torus not enlarged:
Ovules numerous in each cell; leaves fairly large and broad *Clethraceae.*
Ovules 1-3; fruits winged *Cyrillaceae.*
Ovules several in each cell or in the ovary; leaves narrow *Pittosporaceae.*
Ovule usually solitary; leaves very narrow; not glandular *Polygalaceae.*
Ovules 1-2; leaves very glandular-pilose, circinate in bud *Byblidaceae.*
Anthers opening by slits lengthwise:
Shrubs or trees (to p. 31):
Leaves stipulate (to p. 29):
Calyx persistent and wing-like in fruit; leaves often with prominent parallel lateral nerves; petals contorted *Dipterocarpaceae.*
Calyx not wing-like in fruit; petals rarely contorted:
Flowers unisexual:
Disk absent; petals not bilobed:
Male petals imbricate *Flacourtiaceae.*
Male petals valvate *Pandaceae.*

Disk present ; petals bilobed — *Chailletiaceae.*
Disk present :
Stipules conspicuous, persistent — *Euphorbiaceae.*
Stipules very inconspicuous, caducous — *Celastraceae.*
Flowers hermaphrodite :
Stamens perigynous, inserted on the calyx-tube :
Ovary 1-celled, composed of one carpel — *Rosaceae.*
Ovary 2-celled, composed of 2 or more carpels — *Hamamelidaceae.*
Stamens hypogynous or inserted on or at the base of a disk :
Stipules axillary, convolute in bud, often very long :
Petals not appendaged inside — *Styracaceae.*
Petals appendaged inside — *Erythroxylaceae.*
Stipules not axillary :
Disk absent, or torus sometimes enlarging in fruit but not glandular :
Sepals 3, much imbricate ; petals imbricate-contorted ; stamens inserted inside a cup of staminodes ; Mascarene Islands — *Chlaenaceae.*
Sepals 5 ; no cup of staminodes present :
Stamens 10, in 2 series ; hairs of the leaves when present not medifixed ; petiole not glandular — *Erythroxylaceae.*
Stamens 8 ; hairs not medifixed ; petiole not glandular ; ovary 4-celled ; racemes catkin-like — *Stachyuraceae.*
Stamens 10, in 1 series ; hairs of leaves often medifixed ; petiole often glandular like the sepals — *Malpighiaceae.*
Stamens usually numerous ; hairs of leaves when present not medifixed ; petiole not glandular — *Ochnaceae.*
Disk present, annular or of separate glands :
Petals entire or emarginate ; ovules erect — *Celastraceae.*
Petals often deeply lobed ; ovules pendulous — *Chailletiaceae.*
Leaves exstipulate :
Stamens united into a tube — *Meliaceae.*
Stamens free or connate only at the base :
Stamens hypogynous or very slightly perigynous (to p. 31) :
Sterile flowers with modified pitcher-like bracts ; mostly epiphytes — *Marcgraviaceae.*
Sterile flowers without modified bracts, or sterile flowers not present :
Stamens double the number of the petals or fewer only by the **abortion of some anthers (to p. 30) :**
Sepals usually with two large glands outside ; hairs of leaves medifixed ; ovary 3-celled, with 1 ovule in each cell ; seeds without endosperm ; fruit often winged — *Malpighiaceae.*
Sepals not glandular ; hairs rarely medifixed :
Ovary 1-celled :
Ovary of 1 carpel :
Torus forming a stipe — *Anacardiaceae.*
Torus not stipitate — *Phytolaccaceae.*
Ovary of more than 1 carpel ; leaves very small ; flowers **spicate-racemose** — *Tamaricaceae.*
Ovary completely 2- or more-celled (or nearly completely 5-celled) :
No disk ; leaves reduced or scale-like ; placenta basal — *Molluginaceae.*

Disk present; leaves not gland-dotted; petals mostly valvate:
Flowers hermaphrodite — *Olacaceae.*
Flowers polygamo-dioecious — *Sapindaceae.*
Disk present, often intrastaminal; leaves gland-dotted — *Rutaceae.*
Disk extrastaminal, cupular, crowned with 10 gland-like staminodes; ovary imperfectly 5-celled; soft-wooded trees with geranium-like leaves — *Greyiaceae.*
Disk intrastaminal, closely girding the ovary, not lobed; leaves not gland-dotted:
Ovary 5-7-celled — *Humiriaceae.*
Ovary 2-5-celled — *Cyrillaceae.*
Disk absent; flowers unisexual; ovary 3-4-celled; male petals valvate — *Pandaceae.*
Stamens the same number as the petals or fewer:
Disk absent; flowers polygamous, axillary, solitary or fasciculate:
Carpels not on a gynophore:
Ovules numerous; anthers opening lengthwise or by apical pores; style simple; embryo minute in copious endosperm — *Pittosporaceae.*
Ovules 1-2, pendulous:
Petals imbricate or contorted, clawed; anthers opening by slits — *Linaceae.*
Petals imbricate, not clawed; anthers opening by an apical pore — *Theaceae.*
Petals imbricate, sessile; anthers opening by slits lengthwise — *Aquifoliaceae.*
Carpels on a gynophore — *Cneoraceae.*
Disk present:
Petals valvate; ovules pendulous:
Stamens opposite the petals — *Olacaceae.*
Stamens the same number as and alternate with the petals — *Icacinaceae.*
Petals imbricate or contorted:
Petals more or less spreading:
Leaves not gland-dotted:
Stamens usually 5:
Ovules 1-3 in each cell:
Ovule solitary; wood resinous — *Anacardiaceae.*
Ovules mostly 2 in each cell; wood not resinous — *Celastraceae.*
Ovules 1-3; wood not resinous; flowers in slender racemes — *Cyrillaceae.*
Ovules several to many — *Pittosporaceae.*
Stamens 3, with flattened filaments; wood not resinous; flowers cymose — *Hippocrateaceae.*
Leaves gland-dotted — *Rutaceae.*
Petals erect, more or less connivent:
Petals connivent in the upper part; small herbs with a woody branched rhizome — *Stackhousiaceae.*
Petals free in the upper part; shrubs or small trees — *Epacridaceae.*

Stamens very distinctly perigynous (from p. 29) :
Leaves with 3 or more longitudinally parallel main nerves *Melastomaceae.*
Leaves with more or less pinnate nervation :
Carpels free at the apex ; leaves stipulate *Hamamelidaceae.*
Carpels completely united ; stipules absent :
Anthers inflexed in bud *Lythraceae.*
Anthers erect in bud :
Petals scale-like, opposite the sepals ; ovary wholly superior *Thymelaeaceae.*
Petals not scale-like, alternate with the sepals :
Ovary wholly superior ; petals more or less clawed ; stamens only slightly perigynous ; woody only at the base *Molluginaceae.*
Ovary semi-inferior ; stamens very clearly perigynous ; flowers often in heads ; low shrubs with small leaves *Bruniaceae.*
Ovary quite superior ; trees or shrubs with fairly large leaves *Escalloniaceae.*
Herbs, rarely slightly woody at the base :
Parasites destitute of chlorophyll ; leaves reduced to scales *Monotropaceae.*
Not parasitic ; leaves green :
Leaves covered with dense sticky gland-tipped hairs or processes or setose-ciliate and bilobed, stipulate, often circinate in bud *Droseraceae.*
Leaves not glandular :
Leaves stipulate :
Stamens and petals hypogynous or flowers unisexual :
Flowers hermaphrodite :
Sepals more than 2 :
Sepals valvate *Tiliaceae.*
Sepals imbricate :
Ovary more or less deeply lobed *Geraniaceae.*
Ovary entire :
Stipules not scarious ; petals contorted *Linaceae.*
Stipules scarious ; petals imbricate or small *Molluginaceae.*
Sepals 2, very much imbricate *Portulacaceae.*
Flowers unisexual *Euphorbiaceae.*
Stamens and petals perigynous ; anthers inflexed in bud *Lythraceae.*
Leaves exstipulate :
Sepals 2, much imbricate *Portulacaceae.*
Sepals more than 2 :
Petals connivent in the upper part ; small herbs from a woody branched rhizome *Stackhousiaceae.*
Petals not connivent :
Petals and stamens hypogynous or very slightly perigynous :
Petals contorted, fugacious, mostly large and conspicuous ; embryo straight :
Ovules pendulous ; leaves entire or nearly so *Linaceae.*
Ovules ascending ; leaves dissected *Limnanthaceae.*
Petals imbricate or very small and inconspicuous embryo curved *Molluginaceae.*

Petals and stamens perigynous :
Seeds with endosperm *Saxifragaceae.*
Seeds without endosperm ; carpels with a gland or scale at the base ; anthers erect in bud *Crassulaceae.*
Seeds without endosperm ; carpels without a gland or scale ; anthers inflexed in bud *Lythraceae.*

GROUP 11

One carpel or two or more united carpels with axile, basal or apical placentation ; ovary superior ; petals present, more or less united

Stamens the same number as and opposite to the corolla-lobes :
Ovules solitary in the whole ovary or in each cell of the ovary ; style often lobed :
Trees or shrubs, often with hard wood :
Flowers dioecious ; petals imbricate or valvate ; stamens mostly free from the corolla *Ebenaceae.*
Flowers hermaphrodite ; stamens epipetalous :
Petals imbricate ; hairs often stellate or medifixed *Sapotaceae.*
Petals valvate ; hairs usually simple :
Inflorescence not leaf-opposed ; leaves simple *Olacaceae.*
Inflorescence leaf-opposed ; leaves often compound *Ampelidaceae.*
Herbs or climbers :
Corolla-lobes valvate ; tendrils often present ; inflorescence usually cymose-paniculate, leaf-opposed ; leaves usually with the stipules adnate to the petiole *Ampelidaceae.*
Corolla-lobes imbricate :
Stamens connate into a column, free from the petals ; stipules absent *Menispermaceae.*
Stamens free from each other and from the petals ; stipules scarious, rarely absent *Portulacaceae.*
Stamens more or less adnate to or inserted on the corolla *Plumbaginaceae.*
Ovules 2 or more in each cell ; style undivided ; placentas often basal :
Trees or shrubs with often gland-dotted leaves ; ovules 2 or more in the ovary *Myrsinaceae.*
Herbs or climbers with usually compound leaves and leaf-opposed inflorescence *Ampelidaceae.*
Herbs often with rosettes of leaves ; leaves not gland-dotted *Primulaceae.*
Stamens the same number as the corolla-lobes and alternate with them or more numerous or fewer :
Stamens more than twice as many as the corolla-lobes (to p. 33) :
Anthers opening by apical pores or short pore-like slits :
Corolla-tube very short ; stamens numerous, adnate to the base of the corolla ; anthers not tailed *Saurauiaceae.*
Corolla-tube usually fairly long ; stamens rarely many more than double the number of the corolla-lobes, not adnate to the corolla-tube ; anthers often with tails *Ericaceae.*
Anthers opening by longitudinal slits :
Flowers hermaphrodite :
Leaves simple, sometimes deeply divided :
Bracts more or less pouch-like and adnate to the pedicels ; stems climbing or epiphytic *Marcgraviaceae.*
Bracts and habit not as above :

Stamens hypogynous :
Sepals imbricate :
Trees or shrubs — *Theaceae.*
Herbs or slightly woody at the base — *Molluginaceae.*
Sepals valvate :
Stamens free or nearly so — *Tiliaceae.*
Stamens monadelphous — *Malvaceae.*
Stamens perigynous or epigynous ; sepals usually imbricate :
Leaves often gland-dotted and opposite — *Myrtaceae.*
Leaves not gland-dotted, alternate — *Lecythidaceae.*
Leaves digitately compound, opposite or alternate — *Caryocaraceae.*
Flowers unisexual :
Disk absent ; leaves without stipules — *Ebenaceae.*
Disk present ; leaves usually with stipules — *Euphorbiaceae.*
Stamens as many as or up to twice as many as the corolla-lobes or fewer :
Stamens as many as or more than the corolla-lobes (to p. 37) :
Flowers zygomorphic (irregular) :
Ovary deeply 4-lobed ; style gynobasic — *Labiatae.*
Ovary not 4-lobed ; style not gynobasic :
Lower sepal elongated into a tubular spur ; ovary 5-celled — *Balsaminaceae.*
Lower sepal not spurred ; ovary usually 2-celled :
Ovules numerous :
Leaves simple :
Corolla-lobes induplicate or contorted — *Solanaceae.*
Corolla-lobes imbricate or folded — *Scrophulariaceae.*
Leaves compound or 1-foliolate — *Bignoniaceae.*
Ovules few :
Anthers 2-celled, opening by a longitudinal slit — *Verbenaceae.*
Anthers 1-celled, opening by a longitudinal slit — *Selaginaceae.*
Anthers 1-2-celled, opening by a terminal pore — *Polygalaceae.*
Flowers actinomorphic (regular) :
Leaves opposite or verticillate, mostly exstipulate :
Anthers opening by apical pores or pore-like slits :
Filaments of the stamens often geniculate and inflexed ; anthers mostly opening by a single (rarely 2) pore ; leaves mostly with the main nerves longitudinally parallel — *Melastomaceae.*
Filaments of the stamens neither geniculate nor inflexed ; anthers opening by 2 pores ; leaves without longitudinally parallel nerves :
Woody plants with usually evergreen leaves ; stamens hypogynous — *Ericaceae.*
Herbaceous ; stamens epipetalous — *Gentianaceae.*
Anthers opening by longitudinal slits :
Leaves gland-dotted or pustulate ; petals usually shortly tubular :
Styles terminal ; stamens epipetalous — *Loganiaceae.*
Style not inserted at the inner base of the carpels ; stamens not epipetalous — *Rutaceae.*
Style inserted at the very inner base of the carpels ; stamens epipetalous — *Boraginaceae.*
Leaves not gland-dotted ; petals usually joined high up :
Style single with often a large more or less capitate stigma :
Pollen granular ; leaves stipulate or sheathing at the base :
Corolla scarious ; mostly herbs with radical leaves and dense spikes of flowers — *Plantaginaceae.*
Corolla not scarious ; flowers not in dense spikes :
Trees or shrubs ; leaves often stipulate — *Loganiaceae.*

Mostly herbs or scramblers ; leaves not stipulate *Solanaceae.*
Pollen agglutinated in wax-like masses ; corolla with a corona ; leaves exstipulate *Asclepiadaceae.*
Pollen granular ; corolla without a corona ; leaves exstipulate :
Corolla-lobes contorted or rarely valvate *Apocynaceae.*
Corolla-lobes imbricate :
Leaves not verticillate *Scrophulariaceae.*
Leaves verticillate *Verbenaceae.*
Styles with more than 1 separate stigmas :
Stamens double the number of the corolla-lobes ; petals united only at the base :
Mostly herbaceous ; flowers hermaphrodite :
Petals not numerous *Lythraceae.*
Petals numerous *Molluginaceae.*
Trees or shrubs ; flowers dioecious *Ebenaceae.*
Stamens the same number as the corolla-lobes :
Rudimentary stipules often present ; stamens and corolla-lobes 4 : *Salvadoraceae.*
Stipules absent :
Style gynobasic *Boraginaceae.*
Style terminal :
Trees or shrubs :
Ovules numerous in each cell, or if solitary then corolla-lobes valvate *Loganiaceae.*
Ovules 1-2 in each cell ; corolla-lobes imbricate *Verbenaceae.*
Herbs or herbaceous climbers :
Ovary imperfectly celled by the intrusive parietal placentas *Gentianaceae.*
Ovary perfectly celled with axile placentas :
Ovary 3-5-celled ; style 3-5-lobed *Polemoniaceae.*
Ovary 2-celled ; style simple *Solanaceae.*
Leaves alternate or all radical or reduced to scales :
Leafless parasites destitute of chlorophyll ; flowers hermaphrodite :
Ovary 1-4-6-lobed and -celled ; ovules very numerous in each cell *Monotropaceae.*
Ovary 10-14-lobed, 20-28-celled ; ovules solitary in each cell *Lennoaceae.*
Ovary more or less 2-celled ; ovules 4 in the ovary *Convolvulaceae.*
Not parasitic or rarely so ; leaves more or less green and normally developed :
Leaves stipulate, stipules sometimes soon falling off :
Leaves densely covered with viscid gland-tipped hairs, mostly all radical ; often stemless herbs ; flowers mostly in simple circinate cymes ; placentas subbasal ; styles 3-5, mostly free *Droseraceae.*
Leaves not as above :
Flowers unisexual ; petals not bifid ; ovary usually 3-lobed and 3-celled ; calyx not wing-like in fruit *Euphorbiaceae.*
Flowers hermaphrodite or unisexual ; petals bifid or bilobed ; calyx not wing-like in fruit *Chailletiaceae.*
Flowers hermaphrodite ; petals not bilobed ; ovary 1-celled, 1-ovulate ; stamens 5 or 10 ; calyx wing-like in fruit *Ancistrocladaceae.*
Leaves exstipulate :
Stamens hypogynous or perigynous, free from the corolla or slightly adnate to its base (to p. 36) :

Anthers opening by terminal pores, often with appendages; calyx persistent, sometimes petaloid; corolla-lobes contorted or imbricate; woody plants *Ericaceae.*

Anthers opening by pores; without appendages; glandular-pilose herbs *Byblidaceae.*

Anthers opening by longitudinal slits:

Stamens 4-6:

Leaves gland-dotted; ovary mostly deeply lobed; petals connivent by their claws; disk usually conspicuous between the stamens and ovary *Rutaceae.*

Leaves not gland-dotted; ovary mostly entire:

Petals only slightly united at the base:

Disk present in the flowers, usually conspicuous:

Corolla-segments valvate; ovules 2-5 in each cell:

Stamens opposite the petals or more numerous than them *Olacaceae.*

Stamens the same number as and alternate with the petals *Icacinaceae.*

Corolla-segments imbricate; ovules numerous; sepals imbricate:

Leaves not small and ericoid *Pittosporaceae.*

Leaves small and ericoid *Tamaricaceae.*

Disk absent, or if present, adherent to the ovary:

Ovules numerous; sepals imbricate; not epiphytic *Pittosporaceae.*

Ovules numerous; sepals very imbricate; epiphytic or scandent; bracts 3-lobed *Marcgraviaceae.*

Ovules 1-2 in each cell; indumentum not stellate or lepidote; calyx-lobes imbricate; leaves simple *Aquifoliaceae.*

Ovules 2 in each cell, collateral, ascending; leaves pinnate *Connaraceae.*

Ovules few in each cell; indumentum often stellate or lepidote; calyx-lobes valvate or open *Styracaceae.*

Petals united high up; sometimes free at the base:

Calyx-lobes valvate, herbaceous; anthers connivent around the style:

Herbs; not aquatic *Campanulaceae.*

Trees or shrubs *Burseraceae.*

Calyx-lobes imbricate, rather leathery; shrubs or shrublets; anthers free *Epacridaceae.*

Calyx-lobes imbricate; herbs from a woody rhizome *Stackhousiaceae.*

Calyx-lobes very imbricate; aquatic herbs *Plantaginaceae.*

Stamens more than 6:

Stamens connate into a tube *Meliaceae.*

Stamens free or slightly connate only at the base:

Disk absent; corolla long and tubular;

Calyx very much imbricate; flowers hermaphrodite *Fouquieraceae.*

Calyx not or very slightly imbricate; flowers unisexual *Ebenaceae.*

Disk present, or if inconspicuous or absent then the corolla-tube very short:

Leaves gland-dotted, often compound or unifoliolate *Rutaceae.*

Leaves not gland-dotted, simple or very rarely compound:

Disk present in the flowers :
Leaves well developed, not small and ericoid :
Leaves simple ; bark not bitter :
Petals contorted — *Cyrillaceae.*
Petals valvate — *Olacaceae.*
Leaves compound or unifoliolate ; bark usually bitter — *Simarubaceae.*
Leaves small and ericoid ; flowers in spikes or racemes — *Tamaricaceae.*
Disk absent :
Trees or shrubs :
Ovules 1-2 in each cell ; indumentum not stellate ; calyx-lobes imbricate :
Calyx-tube very short — *Aquifoliaceae.*
Calyx-tube long and slender — *Thymelaeaceae.*
Ovules few in each cell ; indumentum often stellate or lepidote ; calyx-lobes valvate or open — *Styracaceae.*
Herbs ; sepals often scarious — *Molluginaceae.*

Stamens inserted on the corolla-tube or in a column adnate to the stigma (from p. 34) :
Style gynobasic :
Style 1 ; fruit composed of pyrenes or nutlets — *Boraginaceae.*
Style 2 ; fruit mostly capsular — *Convolvulaceae.*
Style not gynobasic, terminal :
Corolla valvate or plaited in bud (in the latter case the limb may be somewhat twisted but not truly imbricate) :
Ovules 1-4 in each ovary cell :
Ovules basal, erect — *Convolvulaceae.*
Ovules pendulous from the top of the ovary — *Icacinaceae.*
Ovules numerous in each ovary cell — *Gentianaceae.*
Flowers with a corona ; pollen agglutinated in wax-like masses — *Asclepiadaceae.*
Flowers without a corona ; pollen not agglutinated in wax-like masses — *Solanaceae.*
Corolla imbricate or contorted in bud :
Corolla contorted ; ovary mostly 3-celled with axile placentas — *Polemoniaceae.*
Corolla contorted ; ovary 1-2-celled :
Carpels completely united — *Hydrophyllaceae.*
Carpels more or less free :
Pollen agglutinated in wax-like masses — *Asclepiadaceae.*
Pollen not agglutinated in wax-like masses — *Apocynaceae.*
Corolla imbricate ; ovary 1-2- (rarely up to 5-) celled :
Flowers arranged in a dense leafy head ; shrubs with sessile imbricate leaves ; ovary 2-celled — *Bruniaceae.*
Flowers in dense spikes ; herbs with radical leaves and broad sheathing petioles — *Plantaginaceae.*
Flowers neither in heads nor in spikes, sometimes corymbose or cymose :
Ovary 3-10-celled ; leaves evergreen :
Stamens 4-5 :
Anthers 2-celled — *Diapensiaceae.*
Anthers 1-celled — *Epacridaceae.*
Stamens 10 — *Dichidantheraceae.*
Ovary 1-2- or spuriously 4-celled :

Herbs :
Style undivided or very shortly lobed ; lower leaves opposite *Gentianaceae.*
Style deeply 2-lobed or styles 2 ; all the leaves alternate or radical *Hydrophyllaceae.*
Style undivided ; stigmas terminal, small or more or less dilated ; all the leaves alternate *Solanaceae.*
Trees or shrubs ; fruits a pyrene or nut *Boraginaceae.*
Stamens fewer than the corolla-lobes ; leaves mostly opposite (from p. 33) :
Flowers actinomorphic :
Stamens more than 1 :
Ovules numerous ; corolla not dry and scarious :
Ovary constantly and completely 2-celled :
Herbs :
Corolla-lobes induplicate or contorted-plicate *Solanaceae.*
Corolla-lobes imbricate *Scrophulariaceae.*
Shrubs ; stamens 2 *Oleaceae.*
Ovary 1-celled or imperfectly 2-celled by the intrusive placentas *Gesneriaceae.*
Ovules 1-8 in each cell of the ovary ; capsule circumscissile ; corolla scarious with 4 lobes ; mostly herbs with radical leaves and spicate inflorescences *Plantaginaceae.*
Ovules 1-2 in each cell of the ovary ; corolla not scarious :
Corolla-lobes not more than the calyx-lobes :
Corolla-lobes quite equal ; ovules mostly pendulous *Oleaceae.*
Corolla-lobes slightly unequal or limb oblique ; ovules erect *Verbenaceae.*
Corolla-lobes about 3 times as many as the calyx-lobes *Sapotaceae.*
Stamen 1 ; corolla articulating above the base ; flowers in corymbose panicles *Loganiaceae.*
Flowers zygomorphic :
Placenta free-basal, more or less globose ; ovules numerous ; ovary 1-celled ; stamens 2, anthers 1-celled ; stigma sessile or style very short ; aquatic or swamp plants *Lentibulariaceae.*
Placentas axile, or if subbasal then ovules very few :
Ovules numerous in the whole ovary or in each cell of the ovary, or if 2 then superposed :
Anthers mostly free from each other ; ovary completely 2-celled, with the placentas on the septum ; cells ad- and abaxial *Scrophulariaceae.*
Anthers often coherent ; ovary imperfectly 2-celled by the variously intrusive parietal placentas, the latter placed right and left of the floral axis *Gesneriaceae.*
Anthers free but connivent ; ovary mostly 2-celled and then the cells ad- and abaxial (antero-posterior) ; leaves often compound ; woody plants, very rarely herbaceous ; seeds often winged, transverse *Bignoniaceae.*
Anthers often connivent in pairs ; ovary 1-4-celled ; fruit usually with a hard endocarp ; seeds not winged :
Herbs with vesicular glands ; leaves opposite or alternate ; fruit sometimes prickly ; disk mostly inconspicuous *Pedaliaceae.*
Herbs or rarely shrubs with tumid nodes and opposite or verticillate leaves ; seeds inserted on hardened outgrowths from the central placentas ; leaves often prominently marked with cystoliths ; valves of the capsule opening elastically from the apex ; disk cupular or annular *Acanthaceae.*

Shrubs ; nodes not tumid ; leaves alternate ; 2 inner lobes of the corolla broadly emarginate or bifid ; fruit a drupe ; disk subannular or lobed *Chailletiaceae.*

Ovule solitary in each cell of the ovary, or if 2 then collateral :

Leaves opposite or verticillate :

Ovary entire ; style terminal :

Filaments free from each other *Verbenaceae.*

Filaments forming a sheath split on its upper edge *Polygalaceae.*

Ovary 4-lobed ; style gynobasic *Labiatae.*

Leaves alternate :

Filaments free from each other :

Anthers 2-celled ; leaves usually studded with resinous glands *Myoporaceae.*

Anthers 1-celled opening by a slit ; leaves not studded with glands :

Ovary 2-celled *Selaginaceae.*

Ovary 1-celled *Globulariaceae.*

Filaments more or less monadelphous and split along the top ; anthers 1- or rarely 2-celled, opening by a pore at the top *Polygalaceae.*

GROUP 12

One carpel or two or more united carpels with axile, basal or apical placentation ; ovary superior ; petals absent

Hermaphrodite or male (and often the female) flowers without a calyx (perianth) :

Fleshy herbs parasitic on roots, without green colouring matter ; ovule solitary in a 1-celled ovary *Balanophoraceae.*

Moss-like or hepatic-like aquatic herbs with minute flowers ; ovules 2 or more in a 1-celled ovary *Podostemonaceae.*

Neither parasites nor aquatic plants with above habit :

Leaves radical, palminerved ; flowers in a slender spike ; carpel 1 ; ovule 1, erect from the base of the cell ; herb with creeping rhizome *Berberidaceae.*

Leaves not all radical ; above characters not associated :

Trees or shrubs with whorled scale-like leaves *Casuarinaceae.*

Trees, shrubs or herbs with normally developed leaves :

Leaves stipulate ; stipules sometimes adnate to the petiole :

Ovary 1-celled :

Herbs or shrubs ; leaves usually alternate ; flowers in dense spikes ; petiole not dilated and not enclosing the young bud *Piperaceae.*

Trees or shrubs with alternate leaves ; flowers minute on a common open receptacle, the fruit becoming immersed in it *Moraceae.*

Herbs, shrubs or trees with opposite leaves *Chloranthaceae.*

Large trees ; leaves alternate, palmately nerved and lobed, the dilated petiole enclosing the young bud *Platanaceae.*

Ovary 2- or more-celled ; leaves alternate :

Ovules 1-2 in each cell of the ovary ; stipules rarely spinulose, often caducous :

Flowers various, sometimes in an involucre margined with fleshy glands ; seeds usually with copious endosperm ; ovary usually 2-3- or more-celled *Euphorbiaceae.*

Male flowers in catkins or slender spikes ; endosperm absent from the seeds ; ovary 2-6-celled :

Fruit with a cupular involucre or enclosed by the latter *Fagaceae.*

Fruit cone-like, with imbricate scales *Betulaceae.*

Ovules numerous; stipules not spinulose; large trees; leaves not plicately nerved *Hamamelidaceae.*
Ovules numerous; stipules spinulose when old; leaves opposite, plicately nerved; low shrubs *Myrothamnaceae.*
Leaves without stipules:
Trees or shrubs with hard wood:
Flowers in a cyathium *Euphorbiaceae.*
Flowers not in a cyathium:
Leaves not aromatic; flowers dioecious:
Males in catkins on the young branchlets or below the leaves *Balanopsidaceae.*
Male and female flowers solitary, precocious *Eucommiaceae.*
Leaves aromatic, often glandular; flowers in dense spikes; mostly swamp plants; leaves simple *Myricaceae.*
Leaves not aromatic, pinnate; not swamp plants *Oleaceae.*
Leaves not aromatic, fleshy; flowers dioecious; ovary 4-celled; stamens 4; leaves simple; maritime plants *Batidaceae.*
Herbs, sometimes slightly woody at the base:
Ovary 1-celled:
No stinging hairs; stems not fibrous; epidermal cells without cystoliths *Chenopodiaceae.*
No stinging hairs; stems not fibrous; flowers minute, usually densely spicate; epidermal cells often with cystoliths *Piperaceae.*
Stinging hairs often present; stems often fibrous; epidermal cells mostly with prominent cystoliths *Urticaceae.*
Ovary 2-3-celled; flowers much reduced, often arranged in a cyathium with glands on the margin *Euphorbiaceae.*
Ovary 4-celled; annual herbs with minute unisexual flowers; styles 2; stamen 1 *Callitrichaceae.*
All the flowers (or at any rate the male) with a calyx, sometimes minute or petaloid and long tubular:
Moss-like or hepatic-like herbs with minute flowers (submerged in fresh water) *Podostemonaceae.*
Not as above:
Leaves opposite or verticillate, never all radical (to p. 42):
Leaves stipulate (to p. 41):
Stamens more than twice the number of the sepals:
Flowers unisexual:
Style terminal *Euphorbiaceae.*
Style basal *Cynocrambaceae.*
Flowers hermaphrodite:
Sepals free or nearly so; stamens hypogynous.
Filaments trifid at the apex, the two lateral lobes overlapping the anther; ovary 10-celled; stamens 10 *Zygophyllaceae.*
Filaments entire; ovary 5-celled; stigma ligulate, thick *Geraniaceae.*
Filaments entire; ovary 1-5-celled; stigmas not ligulate:
Herbs or slightly woody at the base *Molluginaceae.*
Trees; stipules large and membranous *Cunoniaceae.*
Sepals united into a tube; stamens inserted on the calyx-tube, more or less perigynous:
Fruit capsular *Ficoidaceae.*
Fruit an achene *Rosaceae.*
Stamens definite, up to twice as many as the sepals:
Stamens the same number as and alternate with the sepals, 4 or 5:

Trees or shrubs, not fleshy ; leaves often toothed :
Ovules 1-2 *Rhamnaceae.*
Ovules numerous *Crypteroniaceae.*
Herbs or undershrubs with fleshy entire leaves *Ficoidaceae.*
Stamens the same number as and opposite the sepals or more numerous or fewer :
Ovary with free-central placentation ; ovules usually several to numerous *Caryophyllaceae.*
Ovary with axile, basal or apical placentation :
Flowers arranged in an involucre (cyathium) margined with fleshy often more or less semilunar glands ; male flower with only one stamen, jointed about the middle ; ovary often stipitate, mostly 3-celled *Euphorbiaceae.*
Flowers not as above ; stamens usually more than 1 ; ovary mostly sessile :
Flowers unisexual :
Ovary 2- or more-celled *Euphorbiaceae.*
Ovary 1-celled :
Ovule erect :
Filaments inflexed in bud ; mostly herbaceous plants with fibrous stems and sometimes stinging hairs ; juice not milky *Urticaceae.*
Filaments not inflexed in bud ; mostly trees and shrubs, very rarely herbs ; juice mostly milky ; flowers often minute and arranged on or inside an enlarged " receptacle " *Moraceae.*
Ovule pendulous :
Filaments not inflexed in bud :
Fruit a drupe ; flowers monoecious or subdioecious *Ulmaceae.*
Fruit a small dry achene ; flowers dioecious *Cannabinaceae.*
Filaments erect or inflexed in bud *Moraceae.*
Flowers hermaphrodite :
Sepals free or nearly so ; stamens more or less hypogynous ; ovary 3-10-celled :
Ovules numerous in each cell ; ovary 3-5-celled ; stamens often 5, rarely up to 10 :
Stipules often lobed or lacerate, persistent ; mostly herbs *Molluginaceae.*
Stipules membranous, deciduous ; trees *Cunoniaceae.*
Ovules 2 or more in each cell ; ovary 5-10-celled ; stamens 5 or 10 :
Filaments 3-fid at the apex ; ovary 10-celled ; ovules 2-3 in each cell, ascending ; leaves opposite, connate, subterete *Zygophyllaceae.*
Filaments entire ; ovary 5-celled ; ovules pendulous from the inner angle of the cells ; ovary beaked ; leaves opposite, entire or 3-lobed *Geraniaceae.*
Sepals free or nearly so ; stamens hypogynous or perigynous ; ovary 1-celled :
Stipules forming a tube (ochrea) around the stem ; fruit a nut *Polygonaceae.*
Stipules not forming a tube round the stem, often scarious and bilobed or more divided ; leaves opposite *Illecebraceae.*
Stipules minute ; leaves verticillate *Molluginaceae.*
Sepals connate into a tube ; stamens perigynous ; ovary 1-5-celled :
Flowers hermaphrodite ; leaves simple *Ficoidaceae.*

Flowers dioecious ; leaves 1-3-foliolate *Rosaceae.*
Leaves without stipules :
Ovary 1-celled, with free-central placentation, not septate or only imperfectly septate at the base; ovules usually numerous *Caryophyllaceae.*
Ovary with axile, basal or apical placentation :
Ovary and fruit compressed contrary to the septum, 2-celled ; trees or shrubs with perulate buds ; leaves simple or palmately lobed or pinnately foliolate ; flowers andromonoecious or dioecious *Aceraceae.*
Ovary if compressed then not contrary to the septum or septa :
Ovules 2 or more in each cell of the ovary or in a 1-celled ovary :
Flowers hermaphrodite :
Shrubs or trees with woody branches :
Calyx more or less spreading, or not tubular :
Large disk often present *Celastraceae.*
No disk *Geissolomataceae.*
Calyx tubular, lobes valvate ; disk absent or inconspicuous :
Ovary 2-4-celled ; calyx not or rarely petaloid, often with accessory lobes *Lythraceae.*
Ovary many-celled *Sonneratiaceae.*
Ovary 4-celled ; calyx petaloid, lobes valvate ; stamens opposite the lobes ; flowers often in heads *Proteaceae.*
Ovary 4-celled ; calyx more or less petaloid ; stamens alternate with the lobes *Penaeaceae.*
Herbs :
Sepals united into a tube ; stamens perigynous :
Sepals imbricate, without accessory lobes *Ficoidaceae.*
Sepals valvate, often with accessory lobes *Lythraceae.*
Sepals free or nearly so ; stamens usually hypogynous :
Style-branches or styles 2-3 ; leaves connate at the base ; ovules 1-2 *Illecebraceae.*
Styles more or less free ; leaves not connate at the base *Amarantaceae.*
Flowers unisexual :
Leaves digitately compound *Euphorbiaceae.*
Leaves simple ; ovary 3-celled *Buxaceae.*
Leaves simple ; ovary 1-celled *Garryaceae.*
Ovule solitary in each cell of the ovary or in a 1-celled ovary :
Stamens circinately involute in bud ; calyx usually long-tubular, often coloured ; bracts sometimes petaloid *Nyctaginaceae.*
Stamens sometimes inflexed but not circinate in bud ; calyx often scarious but rarely petaloid ; bracts often scarious :
Submerged aquatics with verticillate divided leaves ; flowers monoecious *Ceratophyllaceae.*
Not submerged aquatics ; leaves very rarely verticillate :
Flowers not arranged in a cyathium ; mostly hermaphrodite :
Trees, shrubs or undershrubs with woody stems ; embryo straight, usually very small :
Stamens numerous *Monimiaceae.*
Stamens 6-9 ; flowers dioecious ; calyx not petaloid, deeply lobed ; flowers cymose *Barbeyaceae.*
Stamens definite (sometimes reduced to one) ; calyx often petaloid, usually long-tubular ; flowers often in heads *Thymelaeaceae.*
Stamens 4 ; calyx membranous, campanulate, 2-lipped ; flowers densely spicate *Batidaceae.*

Herbs sometimes a little woody at the base; embryo more or less curved:
Sepals united into a tube; stamens perigynous *Ficoidaceae.*
Sepals free or nearly so; stamens mostly hypogynous:
Calyx scarious only on the margin; stamens hypogynous; styles free or nearly so *Molluginaceae.*
Calyx often hyaline all over; stamens often slightly perigynous and connate at the base *Amarantaceae.*
Calyx herbaceous; stamens hypogynous or slightly perigynous, mostly free *Chenopodiaceae.*
Flowers ♂ ♀, arranged in a cyathium margined with glands *Euphorbiaceae.*

Leaves alternate or radical or reduced to scales; sometimes tubiform or pitcher-like (from p. 39):
Parasitic plants with the leaves reduced to scales:
Anthers opening by slits:
Flowers spicate; sepals imbricate *Monotropaceae.*
Flowers densely crowded; sepals valvate *Balanophoraceae.*
Anthers opening by valves *Lauraceae.*
Not parasitic; leaves normally developed:
Leaves stipulate:
Stamens monadelphous, usually numerous; calyx mostly valvate:
Anthers 2-celled; flowers unisexual *Sterculiaceae.*
Anthers 1-celled; flowers hermaphrodite *Malvaceae.*
Anthers 2-celled; flowers unisexual *Euphorbiaceae.*
Stamens free or shortly connate at the base:
Stamens the same number as the sepals and alternate with them:
Herbs *Molluginaceae.*
Trees, shrubs or climbers *Rhamnaceae.*
Stamens the same number as the sepals and opposite to them or more numerous or fewer:
Leaves compound:
Flowers unisexual:
Ovary 1-celled, of 1 carpel *Moraceae.*
Ovary 2- or more-celled *Euphorbiaceae.*
Flowers hermaphrodite:
Flowers actinomorphic:
Seeds without endosperm; style basal or ventral on the 1-carpelled ovary *Rosaceae.*
Seeds usually with endosperm; style or styles more or less terminal; ovary of more than 1 carpel *Saxifragaceae.*
Flowers slightly zygomorphic; leaves pinnate *Melianthaceae.*
Leaves simple:
Ovary 2- or more-celled:
Flowers unisexual:
Ovary quite superior; anthers opening by slits:
Male flowers not in catkins *Euphorbiaceae.*
Male flowers in catkins *Betulaceae.*
Ovary semisuperior; anthers often opening by valves *Hamamelidaceae.*
Flowers hermaphrodite:
Trees or shrubs; ovary 2-celled; carpels often free at the top; anther-cells often opening by valves; stipules often paired *Hamamelidaceae.*

Herbs :
Stamens perigynous ; ovary 1-3-celled *Saxifragaceae.*
Stamens hypogynous ; ovary 3-5-celled, very rarely 2-celled *Molluginaceae.*
Ovary 1-celled, mostly of 1 carpel :
Stipules ochreate, *i.e.* sheathing and more or less membranous around the stem *Polygonaceae.*
Stipules not ochreate :
Ovary of 1 carpel; stamens inflexed in bud; flowers mostly unisexual:
Herbs *Urticaceae.*
Trees or shrubs *Moraceae.*
Ovary of 1 carpel ; stamens erect in bud ; flowers hermaphrodite *Rosaceae.*
Ovary usually of more than 1 carpel ; stamens erect in bud ; flowers always unisexual *Euphorbiaceae.*
Ovary usually of more than 1 carpel; stamens erect in bud; flowers hermaphrodite *Phytolaccaceae.*
Leaves exstipulate :
Stamens the same number as and alternating with the calyx-lobes :
Leaves compound, mostly pinnate :
Flowers mostly hermaphrodite, not involucrate *Burseraceae.*
Flowers dioecious, the females solitary, enclosed in and adnate to an involucre *Julianiaceae.*
Leaves simple, minute ; small shrubs *Ficoidaceae.*
Leaves simple, dentate ; annual herb ; stamens 1-2 *Circaeasteraceae.*
Stamens the same number as the calyx-lobes and opposite to them or more numerous or fewer :
Leaves compound :
Herbs ; ovary composed of 1 carpel ; leaves ternately compound ; flowers paniculate or racemose, usually very small *Ranunculaceae.*
Shrubs or trees :
Stamens the same number as and opposite to the calyx-(perianth) segments ; leaves often many times divided ; flowers often in heads or dense spikes or racemes; calyx mostly petaloid *Proteaceae.*
Stamens usually more numerous than the calyx-lobes ; calyx rarely petaloid :
Flowers unisexual ; leaves digitate *Euphorbiaceae.*
Flowers mostly polygamous ; leaves pinnate ; bark bitter, not resinous *Simarubaceae.*
Flowers mostly polygamous dioecious ; leaves pinnate ; bark not bitter ; wood not resinous *Sapindaceae.*
Flowers various ; leaves pinnate or trifoliolate ; wood resinous *Anacardiaceae.*
Leaves simple :
Leaves modified into pitchers or tubes :
Flowers dioecious ; stamens united into a column *Nepenthaceae.*
Flowers hermaphrodite ; stamens free *Sarraceniaceae.*
Leaves not modified as above :
Stamens circinately involute in bud ; calyx-tube often rather long ; ovary 1-celled ; ovule 1, basal *Nyctaginaceae.*
Stamens sometimes inflexed but not circinate in bud :
Stamens more or less connate into a central column :
Herbs or weak climbers ; calyx (perianth) often long-tubular and oblique ; ovules numerous ; seeds with smooth endosperm ; flowers hermaphrodite *Aristolochiaceae.*

Habit various; flowers unisexual; calyx not oblique; disk or disk-glands often present; ovules pendulous; endosperm smooth *Euphorbiaceae.*

Trees or shrubs; calyx mostly small, not oblique; ovule erect; seeds with ruminate endosperm *Myristicaceae.*

Stamens free or the filaments shortly connate only at the base:

Stamens distinctly perigynous or flowers unisexual; sepals connate into a tube below:

Herbs or twiners; anthers opening by longitudinal slits:

Twiners; flowers in axillary spikes, racemes or panicles; ovule solitary, basal *Basellaceae.*

Not twiners; herbs:

Calyx long and tubular, many-ribbed; stamens about 11, unequal; ovules 2 or more *Lythraceae.*

Calyx-tube short or almost absent:

Ovary quite superior; leaves often thick and fleshy *Crassulaceae.*

Ovary semisuperior; leaves not fleshy *Ficoidaceae.*

Trees or shrubs; anthers opening by valves or longitudinal slits:

Small shrubs; stamens numerous, in bundles alternate with the calyx-lobes *Ficoidaceae.*

Mostly undershrubs with often rather long and usually petaloid calyx (perianth); leaves frequently small and evergreen, sometimes much divided; stamens definite:

Calyx-lobes imbricate *Thymelaeaceae.*

Calyx-lobes valvate:

Stamens the same number as and opposite the calyx-lobes *Proteaceae.*

Stamens more than the primary lobes of the calyx *Lythraceae.*

Trees or shrubs; leaves usually large; stamens mostly numerous *Monimiaceae.*

Trees or shrubs; leaves large, very rarely reduced; stamens usually double the number of the calyx-lobes, in 2 or 4 rows *Lauraceae.*

Stamens hypogynous or slightly perigynous if accompanied by a disk, or flowers unisexual:

Flowers in a cyathium margined by bracts *Euphorbiaceae.*

Flowers not in a cyathium:

Trees or shrubs:

Leaves glandular; flowers in catkin-like spikes or racemes; berry often warted *Myricaceae.*

Leaves not glandular; flowers not in catkin-like inflorescences:

Leaves very small and ericoid; fruit drupaceous, succulent; ovary 2-9-celled with 1 axile ovule in each cell; stamens 2-3 *Empetraceae.*

Leaves not as above and other characters not associated:

Flowers unisexual; ovule solitary, pendulous; seeds with straight embryo *Euphorbiaceae.*

Flowers hermaphrodite; ovule solitary, pendulous; embryo straight *Olacaceae.*

Flowers unisexual or polygamous; ovules 2 in each cell, collateral or the lower ascending; seeds without endosperm and spirally twisted embryo *Sapindaceae.*

Flowers hermaphrodite or unisexual; ovule solitary, basal; seeds with the embryo curved around the endosperm *Phytolaccaceae.*

Herbs:

Ovule 1 or more in each carpel *Molluginaceae.*

Ovule 1 in each carpel or ovary; ovary of several subdistinct carpels *Phytolaccaceae.*

Ovule 1: ovary 1-celled:

Perianth herbaceous *Chenopodiaceae.*

Perianth more or less scarious *Amarantaceae.*

Imperfectly known family of this group *Scyphostegiaceae.*

GROUP 13

One carpel or more than one carpel with axile, basal or apical placentas; ovary inferior; petals present

Leaves opposite or verticillate, never all radical, rarely reduced to scales (to p. 46):

Leaves compound, much divided or unifoliolate; flowers mostly umbellate or capitate, rarely racemose; calyx small, entire or toothed; petals usually 5, valvate or slightly imbricate; disk on top of the ovary, often confluent with the style or styles; ovule solitary in each cell, pendulous; seeds with copious endosperm and small embryo:

Trees or shrubs; petals usually valvate; ovary 1-many-celled; fruit usually a berry or drupe *Araliaceae.*

Herbs; petals imbricate, rarely valvate; ovary 2-celled; styles 2; fruit of dry indehiscent mericarps *Umbelliferae.*

Leaves simple:

Leaves stipulate:

Stamens the same number as and opposite the petals *Rhamnaceae.*

Stamens alternate with the petals or more numerous:

Ovary composed of 2 carpels, more or less free at the apex; flowers mostly capitate; ovules pendulous; trees or shrubs; anthers often opening by valves *Hamamelidaceae.*

Ovary mostly 2-celled; flowers rarely capitate; anthers opening by slits *Cunoniaceae.*

Ovary composed of 2-6 carpels, 2-6-celled or 1-celled by suppression of the septa; flowers rarely congested; ovules pendulous; mostly maritime trees or shrubs *Rhizophoraceae.*

Ovary various; flowers rarely in heads; ovules ascending or attached to the central axis; trees, shrubs or herbs *Rosaceae.*

Leaves exstipulate:

Trees, shrubs or climbers:

Stamens numerous:

Ovary cells not superposed:

Leaves gland-dotted; style simple with a small capitate stigma or very rarely 3-4-lobed *Myrtaceae.*

Leaves with pellucid lines or with stellate hairs; style 5-10-lobed or styles 3-5 and more or less free; ovary 2-10-celled *Hydrangeaceae.*

Leaves not gland-dotted, with longitudinally parallel nerves; stamens jointed, the connective often produced at the base; anthers opening by a terminal pore *Melastomaceae.*

Ovary cells superposed; leaves not gland-dotted; style simple *Punicaceae.*

Stamens as many to twice as many as the petals :
Stamens the same number as and opposite to the petals ; mostly parasitic shrubs or trees ; calyx usually much reduced *Loranthaceae.*
Stamens the same number as and alternate with the petals or more numerous :
Anthers opening by a terminal pore ; filaments often jointed ; leaves often with 3-9 longitudinally parallel nerves *Melastomaceae.*
Anthers opening by longitudinal slits ; calyx mostly valvate :
Ovule solitary ; fruits mostly drupaceous ; endosperm copious ; petals without alternate scales *Cornaceae.*
Ovules up to 3 in each cell ; fruit a drupe, not winged ; flowers small, in cymes ; petals with alternating scales *Oliniaceae.*
Ovules numerous ; fruit a capsule or berry ; flowers conspicuous ; no scales *Hydrangeaceae.*
Ovules 2 or more ; fruits mostly winged ; endosperm absent ; flowers in heads, spikes, racemes or panicles *Combretaceae.*
Ovules numerous ; stamens double the number of the petals *Onagraceae.*
Herbs ; sometimes slightly woody, but then often with fleshy leaves :
Anthers opening by a terminal pore ; leaves mostly with longitudinally parallel nerves ; connective of anthers usually produced at the base and jointed to the filament *Melastomaceae.*
Anthers opening by longitudinal slits :
Flowers in umbels or heads ; ovary 2-celled ; carpels separating in fruit and suspended by the divided thread-like central axis (carpophore) *Umbelliferae.*
Flowers in heads surrounded by bracts ; ovary 2-3-celled ; carpels not as above *Cornaceae.*
Flowers not in umbels or heads ; carpels not separating in fruit :
Placenta pendulous from the apex of the 1-celled ovary ; ovules numerous *Saxifragaceae.*
Ovules 1-4, pendulous from the top of the ovary-cells *Haloragaceae.*
Placentas axile with numerous ovules, or ovules very few and pendulous from the apex of the usually 4-celled ovary *Onagraceae.*
Placentas at the bottom of the ovary-cells; petals numerous *Ficoidaceae.*
Leaves alternate or all radical :
Flowers unisexual :
Flowers not in heads or umbels, sometimes paniculate or racemose :
Leaves stipulate ; stipules paired ; no tendrils ; stamens mostly numerous, straight ; flowers often somewhat zygomorphic *Begoniaceae.*
Leaves without stipules ; tendrils often present ; stamens definite or rarely many, anthers often conduplicate or twisted, mostly 3 ; flowers actinomorphic, conspicuous *Cucurbitaceae.*
Leaves without stipules or if present then adnate to the petiole, sometimes anisophyllous and then the smaller leaf appearing like a stipule ; no tendrils ; anthers straight :
Styles 4 ; petals 4, involute in bud ; leaves with 3-5 main nerves ; ovary 4-celled ; flowers not minute ; trees or shrubs *Rhizophoraceae.*
Styles 1-4, separate ; petals 2 or 4, valvate in bud ; ovary 1-4-celled ; flowers mostly minute ; mostly herbs, sometimes with large radical leaves or often aquatic *Haloragaceae.*
Flowers arranged in heads, umbels or corymbs :
Fruit of dry indehiscent mericarps ; ovary 2-celled ; styles 2 ; herbs with usually much dissected leaves *Umbelliferae.*

Characters not as above :
Anthers opening by a single lateral valve : petals linear-spathulate ; ovary 2-celled ; ovules solitary ; leaves stipulate *Hamamelidaceae.*
Anthers opening by slits ; petals usually not linear-spathulate :
Leaves usually stipulate ; flowers usually umbellate *Araliaceae.*
Leaves without stipules ; flowers capitate or corymbose :
Petals imbricate *Nyssaceae.*
Petals valvate *Cornaceae.*
Leaves without stipules ; male flowers corymbose, female solitary *Onagraceae.*
Flowers hermaphrodite :
Stamens numerous :
Aquatic herbs with floating leaves ; flowers usually large and showy ; ovules numerous *Nymphaeaceae.*
Not aquatic :
Herbs :
Leaves exstipulate ; sepals more than 2 :
Styles more or less free ; low herbs often with rosettes of leaves *Saxifragaceae.*
Styles more or less united ; erect or climbing, mostly roughly hispid-pilose herbs *Loasaceae.*
Leaves stipulate, stipules often laciniated and thread-like ; seeds with more or less copious endosperm ; sepals 2 *Portulacaceae.*
Leaves stipulate, not laciniate ; seeds without endosperm ; sepals more than 2 *Rosaceae.*
Trees or shrubs :
Leaves gland-dotted ; stamens mostly very numerous :
Fruits not-winged *Myrtaceae.*
Fruits broadly winged *Lecythidaceae.*
Leaves not gland-dotted :
Style more or less divided or styles separate ; rarely maritime ; leaves often compound ; leaves stipulate :
Stipules not intrapetiolar *Rosaceae.*
Stipules intrapetiolar and connate ; leaves digitate *Araliaceae.*
Style simple ; usually maritime ; leaves simple *Rhizophoraceae.*
Stamens definite in relation to the sepals and petals, the same number as or about twice as many, rarely fewer :
Stamens the same number as and opposite the petals :
Leaves stipulate or not ; not parasites ; flowers often crowded into heads ; ovary 3-celled *Rhamnaceae.*
Leaves exstipulate ; often parasitic ; ovary 1-celled *Loranthaceae.*
Stamens the same number as and alternate with the petals or more numerous or fewer :
Anthers opening by apical pores ; leaves often with very prominent longitudinally parallel nerves ; anthers often unequal, with the connective produced at the base *Melastomaceae.*
Anthers not opening by pores ; leaves usually not as above :
Leaves stipulate :
Herbs :
Leaves simple ; sepals 2 ; fruit a capsule *Portulacaceae.*
Leaves usually compound or much dissected, sometimes peltate ; sepals obsolete or more than 2 ; fruit of 2 indehiscent mericarps *Umbelliferae.*

Trees or shrubs :
Flowers actinomorphic ; corolla not gibbous at the base ; stamens not unilateral :
Leaves simple ; stipules paired ; flowers often capitate ; fruit woody ; stamens up to twice as many as the petals *Hamamelidaceae.*
Leaves compound, rarely simple ; stamens as many as the petals ; fruit a berry or drupaceous ; flowers often umbellate *Araliaceae.*
Leaves compound or simple ; stamens more than the petals ; fruit not woody *Rosaceae.*
Flowers zygomorphic ; corolla often gibbous at the base ; stamens unilateral *Trigoniaceae.*
Leaves exstipulate :
Flowers arranged in heads surrounded by a brightly coloured involucre and simulating a single flower ; petals very unequal, fewer than the stamens ; styles subulate, elongate *Hamamelidaceae.*
Flowers not as above and other characters not associated :
Herbs :
Flowers umbellate ; ovules solitary, pendulous :
Ovary 2-celled ; carpels separating in fruit into 2 indehiscent mericarps *Umbelliferae.*
Ovary 3-4-celled ; carpels not separating in fruit *Araliaceae.*
Flower not umbellate :
Ovules more than 1 in each cell or in a 1-celled ovary :
Mostly scapigerous herbs ; ovary 1-3-celled *Saxifragaceae.*
Leafy stemmed herbs ; ovary mostly 4-celled *Onagraceae.*
Ovules solitary in each cell of the ovary :
Style 1, with a capitate or shortly lobed stigma ; flowers mostly fairly large and conspicuous :
Neither rough-setose nor scabrid ; ovules 1 or more *Onagraceae.*
Usually rough-setose or scabrid ; ovules solitary from the apex of a one-celled ovary *Loasaceae.*
Styles more than 1 :
Styles 5-10 ; carpels 5-10, radiating ; stigmas capitate *Rosaceae.*
Styles up to 4 ; ovary up to 4-celled ; carpels not radiating ; stigmas not capitate *Haloragaceae.*
Shrubs, trees or climbers :
Flowers umbellate ; fruit a berry or drupe *Araliaceae.*
Flowers not umbellate :
Leaves 3-foliolate ; petals 5 ; stamens 5, alternating with glands ; anthers opening by valves *Hernandiaceae.*
Leaves simple ; anthers opening by slits :
Petals contorted ; stamens mostly 4 or 8 *Onagraceae.*
Petals valvate or imbricate :
Petals loriform, valvate *Alangiaceae.*
Petals not loriform :
Petals imbricate ; stamens various *Combretaceae.*
Petals valvate, or if slightly imbricate then stamens usually 5 :
Fruit a capsule or berry ; shrubs or trees *Escalloniaceae.*
Fruit a drupe ; shrubs or trees *Cornaceae.*
Fruit indehiscent, 1-seeded ; climber *Loasaceae.*
Petals convolute or inflexed ; leaves anisophyllous *Rhizophoraceae.*

GROUP 14

One carpel or two or more united carpels with axile, basal, or apical placentation ; ovary inferior ; petals present, more or less united

Leaves opposite :
Leaves stipulate, stipules mostly inter- or intra-petiolar; anthers free from each other :
Leaves simple, entire ; corolla actinomorphic *Rubiaceae.*
Leaves pinnate ; flowers actinomorphic or zygomorphic *Caprifoliaceae.*
Leaves exstipulate :
Leaves usually with longitudinally parallel main nerves ; stamens often double the number of the corolla-lobes, mostly jointed, the connective produced at the base into an appendage *Melastomaceae.*
Leaves and stamens not as above :
Anthers free from each other ; ovules mostly pendulous :
Leaves not gland-dotted ; mostly herbaceous plants, rarely shrubs ; stamens definite :
Stigma not indusiate :
Herbaceous or woody at the base :
Flowers zygomorphic :
Ovary with 1 perfect 1-ovulate cell and often 2 empty cells *Valerianaceae.*
Ovary 1-celled, without additional empty cells ; flowers often capitate *Dipsacaceae.*
Flowers actinomorphic :
Anthers 2-celled ; stamens usually 5 *Campanulaceae.*
Anthers 1-celled ; stamens appearing to be double the number of the corolla-lobes by division of the filaments *Adoxaceae.*
Trees, shrubs, or woody climbers or parasites ; corolla often saccate or spurred at the base :
Stamens double the number of the corolla-lobes ; ovary 6-celled ; a large tree *Lythraceae.*
Stamens the same number as the corolla-lobes :
Stamens alternate with the usually imbricate corolla-lobes ; not parasitic *Caprifoliaceae.*
Stamens opposite the valvate corolla-lobes ; often parasitic *Loranthaceae.*
Stigma indusiate ; ovary 1-2-celled : flowers not capitate *Goodeniaceae.*
Leaves gland-dotted; stamens mostly numerous; trees or shrubs *Myrtaceae.*
Anthers mostly connivent or in pairs around the style :
Ovule solitary ; flowers mostly in heads :
Ovule erect ; calyx usually modified into a pappus of barbellate or plumose bristles *Compositae.*
Ovule pendulous ; calyx not modified into a pappus *Calyceraceae.*
Ovules numerous ; flowers usually not in heads :
Flowers actinomorphic ; stamens the same number as the corolla-lobes *Campanulaceae.*
Flowers zygomorphic ; stamens usually fewer (4 or 2) than the corolla-lobes *Gesneriaceae.*
Leaves alternate or radical :
Stamens 1-2 :
Flowers hermaphrodite :

Anthers with a narrow connective or the cells divergent; filaments free from each other *Gesneriaceae.*
Anthers with very broad connective; filaments free from each other *Columelliaceae.*
Anthers with narrow connective; filaments connate *Stylidiaceae.*
Flowers unisexual; tendrils often present *Cucurbitaceae.*
Stamens 3 or more:
Anthers free from one another or very slightly connate only at the base:
Stamens the same number as and opposite the corolla-lobes:
Herbaceous, leaves not gland-dotted *Primulaceae.*
Trees and shrubs:
Not parasitic; leaves gland-dotted *Myrsinaceae.*
Often parasitic; leaves not gland-dotted *Loranthaceae.*
Stamens alternate with the corolla-lobes or more numerous or fewer:
Corolla actinomorphic:
Herbaceous plants with often milky juice:
Flowers unisexual; stems usually climbing by the tendrils; anthers often sinuous or twisted *Cucurbitaceae.*
Flowers hermaphrodite; no tendrils; anthers usually straight:
Leaves stipulate; sepals 2 *Portulacaceae.*
Leaves exstipulate; sepals more than 2:
Filaments free or nearly so; ovary usually 2- or more-celled *Campanulaceae.*
Filaments monadelphous; ovary 1-celled *Calyceraceae.*
Woody, rarely subherbaceous; juice not milky:
Leaves gland-dotted; stamens mostly numerous *Myrtaceae.*
Leaves not gland-dotted:
Stamens free from the corolla:
Petals valvate; stipules present, often adnate to the petiole *Araliaceae.*
Petals valvate; stipules absent *Lecythidaceae.*
Petals imbricate, rarely valvate:
Stipules absent; leaves simple *Vacciniaceae.*
Stipules present, adnate to the petiole; leaves compound *Araliaceae.*
Petals contorted; small stipules present; branches hooked *Ancistrocladaceae.*
Stamens epipetalous:
Ovary 1-2- (rarely 3-) celled; ovules 2, pendulous; flowers in a leafy capitulum *Bruniaceae.*
Ovary 3-5-celled; ovules 1, or when more axile; flowers not in a capitulum:
Stamens numerous; filaments free or partially connate *Symplocaceae.*
Stamens mostly 5 or 10; filaments not united at the base *Styracaceae.*
Stamens 8, connate *Lissocarpaceae.*
Ovary 1-2-celled; ovule solitary, pendulous; flowers in cymes *Alangiaceae.*
Corolla zygomorphic:
Ovule solitary, pendulous *Valerianaceae.*
Ovules numerous *Lobeliaceae.*
Anthers more or less united into a ring around the style:
Anthers straight, not flexuous:
Flowers not in heads surrounded by a common involucre:
Flowers hermaphrodite, zygomorphic; no tendrils *Lobeliaceae.*
Flowers unisexual, actinomorphic; tendrils usually present *Cucurbitaceae.*

Flowers in heads surrounded by a common involucre :
Ovule erect from the base of the ovary-cell ; filaments usually free from each other ; calyx modified into a pappus *Compositae.*
Ovule pendulous from the top of the ovary-cell ; filaments more or less connate ; calyx not modified into a pappus *Calyceraceae.*
Anthers flexuous or conduplicate ; plants often with tendrils *Cucurbitaceae.*

GROUP 15

One carpel or two or more united carpels with axile, basal or apical placentation ; ovary inferior ; petals absent

Parasitic herbs destitute of chlorophyll, the leaves reduced to scales ; ovules nude or with a single integument :
Ovules 3 from the apex of a central placenta ; flowers dioecious *Myzodendraceae.*
Ovules solitary, pendulous ; flowers densely crowded into inflorescences ; fruits nut-like, 1-seeded ; anthers opening by slits *Balanophoraceae.*
Ovules solitary, pendulous ; flowers spicate, racemose or capitate ; anthers opening by valves *Lauraceae.*
Ovules very numerous ; flowers large, solitary or rarely spicate ; fruit with very numerous minute seeds :
Flowers unisexual *Cytinaceae.*
Flowers hermaphrodite *Hydnoraceae.*
Not parasitic, or if so then more or less woody and often with normally developed leaves (at least with chlorophyll) :
Leaves stipulate :
Flowers unisexual ; stipules often paired :
Stamens and ovules numerous ; fruit often winged ; outer pair of calyx-lobes valvate ; herbs, often with obliquely shaped leaves *Begoniaceae.*
Stamens and ovules few, the latter solitary or paired :
Trees or shrubs ; stipules not adnate :
Male flowers with a calyx :
Ovule 1 in the ovary *Moraceae.*
Ovules 2 in each cell *Fagaceae.*
Male flowers without a calyx *Corylaceae.*
Herbs ; stipules adnate to the petiole *Halorrhagaceae.*
Flowers hermaphrodite, often solitary or racemose :
Stamens the same number as and alternate with the sepals *Rhamnaceae.*
Stamens the same number as and opposite or more numerous than the sepals :
Leaves alternate ; ovules 2, pendulous ; flowers racemose *Rosaceae.*
Leaves alternate or opposite ; ovules 2 to many ; flowers solitary or in short racemes *Rhizophoraceae.*
Flowers rarely unisexual, spicate or capitate, often precocious ; leaves alternate ; ovule 1, pendulous :
Trees or shrubs ; calyx sometimes absent *Hamamelidaceae.*
Herbs, sometimes with large leaves *Halorrhagaceae.*
Leaves exstipulate ; but sometimes when opposite connate and sheathing at the base :
Flowers usually in catkins or slender spikes, or rarely the males in panicles, unisexual :
Leaves pinnate ; ovule 1, erect *Juglandaceae.*
Leaves simple, alternate ; ovules 1-2, descending *Cupuliferae.*
Leaves simple, opposite ; ovules 2, collateral, pendulous *Garryaceae.*

Leaves simple, opposite ; ovule 1 in each cell, pendulous *Chloranthaceae.*
Flowers not in catkins, mostly hermaphrodite :
Calyx calyptrate ; leaves opposite, gland-dotted *Myrtaceae.*
Calyx not calyptrate ; leaves not gland-dotted :
Flowers in simple or compound umbels ; herbs ; leaves sheathing at the base ; ovary 2-celled, separating in fruit into 2 mericarps with resinous lines *Umbelliferae.*
Flowers not or rarely in umbels ; fruit not separating into mericarps :
Ovules numerous on axile placentas :
Calyx actinomorphic :
Ovary many-celled *Sonneratiaceae.*
Ovary 1-4-celled *Onagraceae.*
Calyx zygomorphic *Aristolochiaceae.*
Ovules solitary or few, inserted at the top or base of the ovary :
Ovules pendulous from the apex of the ovary or at the apex of a basal placenta, usually more than 1 :
Mostly trees, shrubs or woody climbers ; sepals mostly valvate :
Anthers opening by valves :
Ovary 1-celled :
Leaves simple ; calyx-lobes imbricate *Lauraceae.*
Leaves simple or compound ; calyx-lobes valvate *Hernandiaceae.*
Ovary 2-3-celled : *Gomortegaceae.*
Anthers opening by longitudinal slits :
Stamens erect in bud, often double the number of the sepals *Nyssaceae.*
Stamens inflexed in bud, often double the number of the sepals :
Ovules at the apex of the ovary *Combretaceae.*
Ovules on a free-basal placenta *Grubbiaceae.*
Stamens erect in bud, the same number as and opposite the sepals :
Placenta not reaching the top of the ovary ; hairs not stellate (tufted in *Exocarpus*) *Santalaceae.*
Placenta reaching to the top of the ovary and adnate to it ; hairs stellate *Octoknemataceae.*
Herbaceous ; sepals mostly imbricate *Ficoidaceae.*
Ovule 1, erect :
Mostly maritime trees and shrubs with often lepidote leaves ; flowers not capitate *Elaeagnaceae.*
Not maritime ; leaves not lepidote ; flowers capitate or densely crowded ; ovule well developed at flowering time *Rhamnaceae.*
Mostly parasitic ; flowers not capitate ; ovule scarcely developed at time of flowering *Loranthaceae.*

LIST OF FAMILIES WITH CERTAIN MORE OR LESS CONSTANT CHARACTERS

SOMETIMES a botanist is faced with the determination of imperfect material consisting perhaps of leaves only. As a help in the identification of such specimens, which can often be best brought about by a process of exclusion, I give below some lists of families in which certain macroscopic characters are constant or predominant.

LEAVES.

Opposite (or verticillate) leaves constant.

Families with *constantly opposite* (or verticillate) leaves :

Aceraceae. Batidaceae. Calycanthaceae. Caprifoliaceae. Caryophyllaceae. Casuarinaceae. Ceratophyllaceae. Chloranthaceae. Columelliaceae. Coriariaceae. Cunoniaceae. Dipsacaceae. Elatinaceae. Eucryphiaceae. Frankeniaceae. Gomortegaceae. Grubbiaceae. Guttiferae. Hydrangeaceae. Labiatae.[1] Loganiaceae.[2] Melastomaceae. Penaeaceae. Rubiaceae. Salvadoraceae. Staphyleaceae. Valerianaceae.

Opposite (or verticillate) leaves predominant.

Families in which *opposite* (or verticillate) leaves are *predominant* :

Acanthaceae. Apocynaceae. Asclepiadaceae. Bignoniaceae. Cistaceae. Ficoidaceae. Gentianaceae. Illecebraceae. Loranthaceae. Lythraceae. Malpighiaceae. Molluginaceae. Monimiaceae. Myrtaceae. Nyctaginaceae. Oleaceae. Pedaliaceae. Rhizophoraceae. Rutaceae. Santalaceae. Scrophulariaceae.

Compound leaves constant.

Families with *constantly compound* (sometimes 1-foliolate) *leaves* :

Caryocaraceae. Connaraceae. Juglandaceae. Lardizabalaceae. Melianthaceae. Moringaceae. Oxalidaceae. Sapindaceae. Tovariaceae.

Compound leaves predominant.

Families in which *compound leaves* are *predominant* :

Ampelidaceae. Araliaceae. Bignoniaceae. Burseraceae. Caesalpiniaceae. Meliaceae. Mimosaceae. Papilionaceae. Rosaceae. Rutaceae. Simarubaceae. Umbelliferae. Valerianaceae. Zygophyllaceae.

Leaves sometimes compound.

Families in which compound leaves sometimes occur (those marked with an * rather frequently) :

Aceraceae. Berberidaceae. Bombacaceae.* Capparidaceae. Caprifoliaceae. Convolvulaceae. Crassulaceae. Cucurbitaceae. Dipsacaceae.* Euphorbiaceae. Gentianaceae. Geraniaceae. Hydrophyllaceae. Menispermaceae. Ochnaceae. Oleaceae. Passifloraceae. Polemoniaceae. Proteaceae.* Ranunculaceae.

[1] Except a few species. [2] Except Buddleia alternifolia.

Sabiaceae. Saxifragaceae.* Staphyleaceae.* Sterculiaceae. Verbenaceae.

STIPULES.

Leaves always stipulate.

Stipules are *constant* in the following families :

Begoniaceae. Caesalpiniaceae. Chailletiaceae. Chloranthaceae. Cunoniaceae. Dipterocarpaceae. Droseraceae. Elatinaceae. Eucryphiaceae. Magnoliaceae. Malvaceae. Mimosaceae. Ochnaceae. Papilionaceae. Polygonaceae. Resedaceae. Rhamnaceae. Rubiaceae. Zygophyllaceae.

Leaves mostly stipulate.

Families in which the leaves are *mostly stipulate* :

Ampelidaceae. Araliaceae. Chlaenaceae. Hamamelidaceae. Linaceae. Molluginaceae. Moringaceae. Portulacaceae. Quiinaceae. Rhizophoraceae. Rosaceae. Sterculiaceae.

Glandular leaves.

Families in which glandular or pellucid dots occur or sometimes occur in the leaves : [1]

Acanthaceae. Alangiaceae. Ampelidaceae. Anacardiaceae. Anonaceae. Balsaminaceae. Bixaceae. Burseraceae. Calycanthaceae. Canellaceae. Capparidaceae. Chloranthaceae. Cochlospermaceae. Combretaceae. Compositae. Cornaceae. Crassulaceae. Dilleniaceae. Euphorbiaceae. Fagaceae. Flacourtiaceae. Geraniaceae. Guttiferae. Hypericaceae. Lacistemaceae. Lauraceae. Leguminosae. Lythraceae. Magnoliaceae. Meliaceae. Monimiaceae. Myoporaceae. Myricaceae. Myristicaceae. Myrsinaceae. Myrtaceae. Nymphaeaceae. Nyssaceae. Olacaceae. Phytolaccaceae. Piperaceae. Polygalaceae. Polygonaceae. Portulacaceae. Primulaceae. Rhamnaceae. Rubiaceae. Rutaceae. Sabiaceae. Samydaceae. Santalaceae. Sapindaceae. Saxifragaceae. Simarubaceae. Theaceae. Thymelaceaceae. Tropaeolaceae. Urticaceae. Verbenaceae. Violaceae.

Stamens opposite the petals.

Families in which the stamens are the same number as and *opposite* the petals :

Ampelidaceae. Berberidaceae. Corynocarpaceae. Ebenaceae. Heteropyxidaceae. Menispermaceae (some). Myrsinaceae. Olacaceae (some). Plumbaginaceae. Portulacaceae (some). Primulaceae. Rhamnaceae. Sabiaceae.[2] Sapotaceae. Sterculiaceae (some).

Inferior ovary.

Families in which the ovary is *inferior* :

Alangiaceae. Araliaceae. Balanophoraceae. Begoniaceae. Bruniaceae (most). Cactaceae. Calyceraceae. Caprifoliaceae. Chloranthaceae. Columelliaceae. Combretaceae. Compositae. Cornaceae. Cucurbitaceae. Cytinaceae. Datiscaceae. Dipsacaceae. Elaeagnaceae. Ficoidaceae (some). Gesneriaceae (some). Goodeniaceae. Grossulariaceae. Grubbiaceae. Haloragaceae. Hamamelidaceae. Juglandaceae. Loasaceae. Lobeliaceae. Loranthaceae. Melastomaceae (most). Myrsinaceae (few). Myrtaceae (most). Nymphaeaceae (some). Nyssaceae. Oliniaceae. Onagraceae. Portulacaceae (few). Punicaceae. Rhizophoraceae (many). Rosaceae (some). Rubiaceae. Santalaceae. Saxifragaceae (some). Stylidiaceae. Styracaceae. Umbelliferae. Vacciniaceae. Valerianaceae.

[1] This list is taken from Blenk, in *Flora*, 1884 : 385.

[2] In this family sometimes some anthers are aborted.

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THE FAMILIES OF FLOWERING PLANTS

I. DICOTYLEDONS

ARRANGED ACCORDING TO A NEW SYSTEM
BASED ON THEIR PROBABLE PHYLOGENY

BY

J. HUTCHINSON, F.L.S.

ASSISTANT IN THE HERBARIUM, ROYAL BOTANIC GARDENS, KEW

ILLUSTRATIONS BY
W. E. TREVITHICK AND THE AUTHOR

This handbook of the *Families of the Flowering Plants* embodies the author's new system of classification, based on probable relationships as seen in the light of modern knowledge relating to plants past and present, and their distribution. Apart from its appeal to students of Systematic Botany, the book is intended to be a practical handbook suited to the needs of field-botanists, gardeners, foresters, travellers, etc. With this end in view, it has been provided with an Analytical Key, to facilitate the determination of plants. Numerous illustrations by the author and Mr. W. E. Trevithick, and maps indicating the distribution of plant-groups, form another feature of the book.

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